

The Milbank Memorial Fund  
**QUARTERLY**

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## MEDICAL CARE DURING THE DEPRESSION<sup>1</sup>

A PRELIMINARY REPORT UPON A SURVEY OF WAGE-EARNING  
FAMILIES IN SEVEN LARGE CITIES<sup>2</sup>

by G. ST.J. PERROTT, EDGAR SYDENSTRICKER, AND  
SELWYN D. COLLINS

THE problem of giving services free has faced the doctor and the hospital during the depression to an extent unknown in any other field. A factory manager was able to economize during hard times by eliminating unproductive departments, by introducing labor-saving devices, or, as a last resort, by closing his plant until the return of prosperity. No such expedients were available to the doctor or the hospital director. Business had to continue as usual in spite of the decrease of paying patients and the tremendous increase of free care.

While the writers of this paper offer no solution for these economic problems, they do have pertinent data to present on the amount of physician's, hospital, and nursing care, both pay and free, received by a group of nearly 7,000 families in seven large cities surveyed early in 1933 by the United States Public Health Service in cooperation with the Milbank Memorial Fund. The reader is referred to previous papers<sup>3</sup> for details, method, and scope of the survey. Briefly,

<sup>1</sup>From the Office of Statistical Investigations, United States Public Health Service and the Division of Research, Milbank Memorial Fund.

<sup>2</sup>Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.

<sup>3</sup>Perrott, G. St.J.; and Collins, Selwyn D.: *Sickness and the Depression*. The Milbank Memorial Fund *Quarterly Bulletin*, October, 1933, xi, No. 4, pp. 281-298. January, 1934, xii, No. 1, pp. 28-34. *American Journal of Public Health*, February, 1934, xxiv, No. 2, pp. 101-107. Perrott, G. St.J.; Collins, Selwyn D.; and Sydenstricker, Edgar: *Sickness and the Economic Depression*,

(continued on page 100)

it consisted of a house-to-house canvass of some 12,000 white families in the poorer districts of eight large cities, one group of coal-mining communities, and a group of cotton-mill villages. The records obtained by the canvasses included (a) the economic history of the family in sufficient detail for computing family income for each year from 1929 through 1932, and (b) a record of all illness during the three months immediately preceding the date of the enumerator's visit, in the spring of 1933, with the extent of disability and of medical care for each case.

The sample population discussed in the present paper comprised 28,939 individuals in 6,686 families for which the data were sufficiently complete for computing the actual income for each of the four years from 1929 to 1932. The population was largely of the wage-earning class, a considerable proportion of which had experienced loss of income due to unemployment and wage reductions. In 1929, 10 per cent of the persons surveyed were in families with an annual per capita income of \$149 or less; by 1932, 43 per cent were in this class. On the other side of the picture, 42 per cent of the persons were in families with an annual per capita income of \$425 or more in 1929, but by 1932 this figure had decreased to 14 per cent.

#### MEDICAL CARE IN A SURVEYED GROUP

Tables 1 and 2 summarize the data for the entire group. We see that 52.4 per cent of *all* cases of illness received attendance of some kind during the three-month survey period; 67.7 per cent of *disabling*<sup>4</sup> illnesses and 30.0 per cent of *non-*

*Public Health Reports*, United States Public Health Service, October 13, 1933, 48, No. 41. Collins, Selwyn D.; and Perrott, G. St.J.: The Economic Depression and Sickness, given at the annual meeting of the American Statistical Association, December, 1933, and published in the *Proceedings*.

<sup>4</sup>Disabling cases consist of illnesses which prevent the patient from carrying on his or her work, school, or other usual activities.

SERVICE	PER CENT OF ILLNESSES RECEIVING SPECIFIED SERVICES		
	All Illness	Disabling Illness	Non-Disabling Illness
ANY SERVICE	52.4	67.7	30.0
Physician	51.7	66.9	29.4
Physician only	40.8	49.1	28.9
Physician and hospital	8.4	14.2	—
Physician and visiting nurse	2.2	3.3	0.5
Physician and bedside nurse	0.1	0.2	—
Hospital	8.4	14.2	—
Excl. of cases hospitalized 90 days	7.4	12.4	—
Visiting nurse	3.8	5.8	1.1
Visiting nurse only	0.7	0.9	0.5
ILLNESS RATE PER 1,000 PERSONS			
Illness rates	237	141	96

<sup>1</sup>Based on 28,959 individuals in 6,686 wage-earning families surveyed in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.

Table 1. Extent of medical care. Per cent of total illnesses and of disabling and non disabling illnesses receiving medical, hospital, and nursing services during a three-months' period in 1933.<sup>1</sup>

disabling illnesses were attended. Attendance by a physician<sup>5</sup> accounted for the greater part of the care received—51.7 per cent of all illnesses were attended by a physician and 40.8 per cent had no other service except that of a physician. Expressed differently, 99 per cent of the illnesses that received care of any sort had a doctor and in 78 per cent of the cases a doctor was the only attendant, the other 21 per cent having hospital or nursing care in addition to a physician. Considering disabling illness, 67 per cent received the care of a physician and in 49 per cent the doctor was the only attendant.

<sup>5</sup>"Physician" includes general practitioner, specialist, surgeon, doctor at public or private clinic, and staff doctor at hospital. It includes also the services of a dentist in connection with illness, and chiropractors, osteopaths, etc., but the amount of this service in connection with illness in the surveyed group was so small as to be negligible.

SERVICE	PER CENT RECEIVING SPECIFIED SERVICE		
	Total	Disabling Illness	Non-Disabling Illness
ANY SERVICE	100.0	100.0	100.0
Physician	98.6	98.7	98.1
Physician only	77.8	72.4	96.3
Physician and hospital	16.1	20.9	—
Physician and visiting nurse	4.2	4.9	1.8
Physician and bedside nurse	0.2	0.3	—
Hospital	16.1	20.9	—
Excl. of cases hospitalized 90 days	14.0	18.3	—
Visiting nurse	7.4	8.5	3.6
Visiting nurse only	1.4	1.3	1.6

<sup>1</sup>See footnote to Table 1.

Table 2. Kinds of medical care received. Distribution of illnesses which received medical care according to kind of services received during a three-months' period in 1933.<sup>1</sup>

Of all illnesses, 8.4 per cent had hospital care within the three-month survey period and of all disabling illnesses, 14.2 per cent had such care. Excluding cases in hospitals during the entire ninety days of the survey period, principally patients in public mental and tuberculosis sanitariums, 7.4 per cent of all illnesses and 12.4 per cent of disabling illnesses received hospitalization. Attendance by a visiting nurse was received by 3.8 per cent of the illnesses; 2.2 per cent had both visiting nurse and physician within the three-month survey period. The group received a negligible amount of care by a bedside nurse and hence this service is not considered in the tables that follow.

#### COMPARISON WITH RESULTS OF OTHER SURVEYS

Comparison with the data of the Committee on the Costs of Medical Care<sup>6</sup> would indicate that the group of wage-

<sup>6</sup>Falk, I. S.; Klem, Margaret C.; and Sinai, Nathan: *The Incidence of Illness and Receipt of Costs of Medical Care Among Representative Families*. Chicago, University of Chicago Press, Publication No. 26, 1933.

earning families here considered received less total care than the lower income groups of that study, \$3,000 and under, which correspond most nearly to the survey group herein discussed. In the Committee's group, 66.5 to 80.4 per cent of illnesses during a period of one year received service of some kind (the larger part of this being services of a physician) as compared with our figure of 52.4 per cent. Hospital care, however, is about the same in both surveyed groups—6.6 to 7.4 per cent for the Committee's survey and 7.4 per cent for the present group when cases with ninety days in the hospital (the whole survey period) are excluded.<sup>7</sup>

A survey of the Metropolitan Life Insurance Company<sup>8</sup> in 1915-1917, recording the illnesses among some 600,000 persons on the day of the canvass, indicated that 9.9 per cent of the persons sick and unable to work were in the hospital. This figure varied from 3.0 per cent in North Carolina to 19.3 per cent in Boston; the combined data for the cities of Boston, Kansas City, New York, Pittsburgh, and Trenton give a figure of 13.1 per cent. The proportion of disabling illnesses hospitalized, 14.2 per cent, in the present survey is not far different from these figures of the Metropolitan Life Insurance Company survey.<sup>9</sup>

<sup>7</sup>Most of these cases in the hospital the whole ninety days were patients in public mental and tuberculosis sanatoriums; few such cases would have been recorded by the Committee's investigators since absent members of the household were not always enumerated. The present study includes a record of nonresident and dead children of the family heads as well as those living in the household. The true nonresidents were not used in the morbidity study, but the records revealed chronic cases chiefly in mental and tuberculosis hospitals that would otherwise have been residents of the household. Such chronic cases in institutions would only occasionally be reported in a survey that made no special inquiry about nonresident members of the families.

<sup>8</sup>Stecker, Margaret Loomis; Frankel, Lee K.; and Dublin, Louis I.: Some Recent Morbidity Data. Metropolitan Life Insurance Co., 1919.

<sup>9</sup>However, comparison should be made with caution because of the differ-

(continued on page 104)

Sydenstricker,<sup>10</sup> in a study of the incidence of illness in Hagerstown from December 1, 1921 to March 31, 1924, found 1.3 per cent of the cases hospitalized and 46 per cent attended by a physician. These figures on the extent of hospitalization are much lower than for surveys in larger cities; the attendance by a physician is not far from the figure obtained in the present survey (52 per cent) but lower than the figure of the Committee on the Costs of Medical Care (67 to 80 per cent).

To summarize, comparison of the results of the present study with those of other surveys indicates that the canvassed group received as much hospitalization as is customary for people in these economic classes but probably less care by a doctor. Internal comparisons in the group, as will be shown later, point to the same conclusion.

#### ILLNESS AND 1932 INCOME

Before discussing economic status and the care received for illness, the incidence of illness in the different economic groups will be considered briefly. Family income per capita has been used as a measure of the well-being of the family. For convenience in discussion, the groups are designated as follows: "poor"—under \$150 per capita per year; "moderate in the time interval covered in the two surveys. The Metropolitan figures for per cent of the illnesses hospitalized would tend to be *higher* than those of the present survey because the illnesses reported on a one-day canvass are made up of a larger proportion of severe cases of long duration than those reported in a survey that also records illnesses that are now completed but did exist within the longer period covered. On the other hand, a factor tending to make the Metropolitan figures *lower* than those of the present survey is that the one-day canvass records as hospitalized only those sick persons who were in the hospital on the day of the visit, and the three-month survey records as hospitalized any case that was in the hospital at any time during the three-month period, whether or not in the hospital on the day of the visit.

<sup>10</sup>Sydenstricker, Edgar: The Extent of Medical and Hospital Service in a Typical Small City. *Public Health Reports*, 1927 (Reprint 1134).

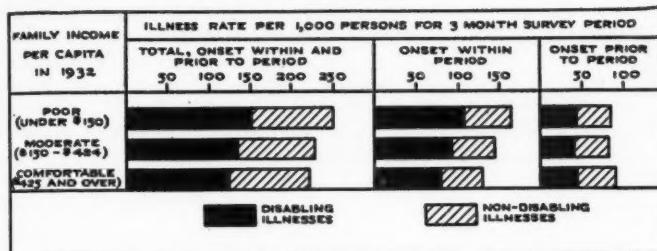


Fig. 1. Disabling and non disabling illness during a three-month period in the early spring of 1933 in wage-earning families classified according to per capita income in 1932 in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.

erate"—\$150-\$424 per capita per year; "comfortable"—\$425 and over per capita per year. Figure 1 shows illness rates for the canvassed population classified in the foregoing three income groups.

Considering disabling illnesses, onset within and prior to the survey period, the "poor" group shows an illness rate 22 per cent higher than the "comfortable" group—152 as against 125 cases per 1,000 persons. Non disabling illness rates show no apparent association with income. The differences in illness rates are largely due to differences in illnesses having their onset within the survey period; the cases with prior onset (principally chronic) show little change with economic status. Hence percentage difference is greatest when disabling illnesses, onset within the study, are considered. The "poor" group show a rate for these acute disabling illnesses of 108 cases per 1,000 persons which is 35 per cent higher than the rate of the "comfortable" group, 80 cases per 1,000 persons.

#### UNITS OF MEASUREMENT AND BASIC RESULTS

Tables 3 and 4 give in some detail the attendance for illness by physician, hospital, and visiting nurse in three groups of the surveyed population classified by per capita income

SERVICE IN SPECIFIED PER CAPITA INCOME GROUPS <sup>2</sup>	PER CENT OF ILLNESSES RECEIVING SPECIFIED SERVICE		
	Total Care	Pay Care	Free Care
Physician			
Poor	50.2	18.8	31.4
Moderate	51.4	34.3	17.1
Comfortable	58.0	45.9	12.1
Hospital, all cases			
Poor	9.5	1.3	8.2
Moderate	7.8	2.8	5.0
Comfortable	6.9	3.4	3.5
Hospital, excl. of cases hospitalized 90 days			
Poor	8.4	1.2	7.2
Moderate	6.8	2.8	4.0
Comfortable	6.0	3.3	2.7
Visiting nurse			
Poor	5.6	0.1	5.5
Moderate	2.8	0.1	2.7
Comfortable	1.2	0.2	1.0

Table 3. Income and medical care. Per cent of total illnesses receiving medical, hospital, and nursing services related to 1932 family income per capita, in canvassed white families in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.<sup>1</sup>

in 1932. The per cent of all illnesses receiving the specified service is shown in Table 3, and the volume of service, that

<sup>1</sup>The illness and population figures on which tables 3 and 4 are based are as follows:

INCOME GROUP	CASE RATE PER 1,000 PERSONS (THREE-MONTHS' PERIOD, 1933)		NUMBER OF CASES		POPULATION OBSERVED
	Total	Exclusive of Cases Hospitalized 90 Days	Total	Exclusive of Cases Hospitalized 90 Days	
Illnesses					
Poor	251	248	3,137	3,101	12,506
Moderate	228	226	2,863	2,833	12,538
Comfortable	221	219	865	857	3,915

<sup>2</sup>Poor—Under \$150 per capita per year.

Moderate—\$150-\$424 per capita per year.

Comfortable—\$425 and over per capita per year.

SERVICE IN SPECIFIED PER CAPITA INCOME GROUPS <sup>2</sup>	VOLUME OF SERVICE, CALLS, OR DAYS					
	Per 1,000 Persons			Per 1,000 Illnesses		
	Total Care	Pay Care	Free Care	Total Care	Pay Care	Free Care
Physician						
Poor	558	219	339	2,219	869	1,350
Moderate	677	456	221	2,963	1,998	965
Comfortable	817	630	187	3,699	2,852	847
Hospital, all cases						
Poor	575	72	503	2,293	287	2,006
Moderate	447	85	362	1,963	375	1,588
Comfortable	371	115	256	1,681	524	1,157
Hospital, excl. of cases hospitalized 90 days						
Poor	323	43	280	1,304	173	1,131
Moderate	233	79	154	1,031	348	683
Comfortable	187	93	94	855	423	432
Visiting nurse						
Poor	79	3	76	319	14	305
Moderate	48	2	46	207	7	200
Comfortable	14	5	9	62	23	39

<sup>1</sup>See footnote to Table 3.<sup>2</sup>See footnote to Table 3.

Table 4. Income and volume of medical service. Physician's or nursing calls or days of hospital care per 1,000 persons in the canvassed population and per 1,000 illnesses (disabling and non disabling) related to 1932 family income per capita in canvassed white families in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.<sup>1</sup>

is, physician's or nurse's calls or days of hospital care, is shown in Table 4 in two ways, (a) per 1,000 persons under observation, and (b) per 1,000 cases of all illness. The illness figures used as the base for these rates are *all* illnesses, whether or not care was received, disabling or non disabling, with onset prior to or within the study.

Table 5 gives similar data for the sample population grouped according to change in economic status from 1929 to 1932. No attempt will be made here to discuss the data

INCOME CHANGE, 1929-1932, AND PHYSICIAN'S AND HOSPITAL SERVICE IN BALTIMORE, BIRMINGHAM,  
CLEVELAND, DETROIT, NEW YORK, PITTSBURGH, AND SYRACUSE

Table 5.

		ECONOMIC STATUS <sup>1</sup> IN				PER CENT OF ILLNESSES RECEIVING SERVICE				VOLUME OF SERVICE, CALLS, OR DAYS				POPULATION OBSERVED			
		1929		1932		Total Care	Pay Care	Free Care	Total Care	Pay Care	Free Care	Total Care	Pay Care	Free Care	Number of Cases <sup>2</sup>	Population Observed	
Poor	Poor	48.7	13.5	35.2	545	133	412	2,283	555	1,728	688	2,884	1,294	1,675	7,109		
Moderate	Poor	52.2	20.1	32.1	520	223	306	2,241	947	1,243	658	1,342	1,938	1,060	6,139		
Moderate	Moderate	50.0	31.2	18.8	655	424	231	2,998	1,938	1,060	1,133	774	2,513	1,113	3,672		
Comfortable	Poor	47.1	20.7	26.4	651	302	349	2,113	980	2,069	877	1,445	6,101	817			
Comfortable	Moderate	52.4	36.7	15.7	400	207	2,946	2,069	877	866	817						
Comfortable	Comfortable	58.6	46.4	12.2	834	641	193	3,745	2,879	3,072							
I. PHYSICIAN'S CARE																	
Poor	Poor	10.6	0.9	9.7	348	29	320	1,531	126	1,405	676	2,884	1,048	1,658	7,109		
Moderate	Poor	8.1	1.4	6.7	290	45	245	1,243	195	1,243	1,323	1,323	1,323	1,323	6,139		
Moderate	Moderate	6.8	2.4	3.8	180	59	121	833	274	559	1,066	1,066	1,066	1,066	2,513		
Comfortable	Poor	6.7	1.0	5.7	377	51	326	1,234	168	1,234	767	767	767	767	6,101		
Comfortable	Moderate	7.4	3.1	4.3	263	99	104	1,118	419	699	1,435	1,435	1,435	1,435	3,072		
Comfortable	Comfortable	5.9	3.1	2.8	196	95	101	886	430	456	811	811	811	811			
II. HOSPITAL CARE <sup>3</sup>																	
Poor	Poor	1.5	0.5	6.5	92	7	85	387	28	359	688	2,884	1,675	1,675	7,109		
Moderate	Poor	5.0	0.0	5.0	78	0	78	332	0	332	0	332	1,675	1,675	7,109		
Moderate	Moderate	2.8	0.0	2.8	33	0	33	152	0	152	0	152	1,342	1,342	6,139		
Comfortable	Poor	5.8	0.1	5.7	71	9	62	231	31	200	200	200	200	200	2,513		
Comfortable	Moderate	2.5	0.1	2.4	46	3	43	196	13	183	183	183	183	183	6,101		
Comfortable	Comfortable	1.2	0.2	1.0	13	5	8	62	24	38	817	817	817	817	3,072		
III. VISITING NURSE'S CARE																	
Poor	Poor	7.0	0.5	6.5	52	7	85	387	28	359	688	2,884	1,675	1,675	7,109		
Moderate	Poor	5.0	0.0	5.0	78	0	78	332	0	332	0	332	1,675	1,675	7,109		
Moderate	Moderate	2.8	0.0	2.8	33	0	33	152	0	152	0	152	1,342	1,342	6,139		
Comfortable	Poor	5.8	0.1	5.7	71	9	62	231	31	200	200	200	200	200	2,513		
Comfortable	Moderate	2.5	0.1	2.4	46	3	43	196	13	183	183	183	183	183	6,101		
Comfortable	Comfortable	1.2	0.2	1.0	13	5	8	62	24	38	817	817	817	817	3,072		

<sup>1</sup>Poor—under \$150 per capita per year; moderate—\$150-\$245 per capita per year; comfortable—\$245 and over per capita per year.

<sup>2</sup>Number of cases of all illness whether or not attended. Case rates per 1,000 persons for the three-year period are as follows: Poor-poor, 239; moderate-poor, 236; moderate-moderate, 219; comfortable-poor, 308; comfortable-moderate, 237; comfortable, 223.

<sup>3</sup>Excludes cases hospitalized 90 days (the entire survey period) which were largely patients in public mental and tuberculosis sanitariums.

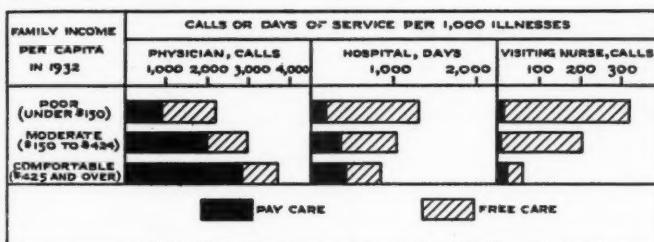


Fig. 2. Service per case, total disabling and non disabling, by physician, hospital, and visiting nurse during a three-month period in the early spring of 1933 in wage-earning families classified according to per capita income in 1932 in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.<sup>22</sup>

in detail. Two graphs, Figures 2 and 3, show that the relations among the data are similar whatever base is employed. The units used in the graphs are the volume of care, expressed as calls or days, received per 1,000 cases of all illnesses whether attended or unattended. The volume of service per 1,000 cases of illness is used rather than the volume per 1,000 persons under observation, as it eliminates the effect of varying illness rates in the different groups.

#### MEDICAL CARE AND 1932 INCOME

Figure 2 shows two different sequences with increasing economic well-being, (1) the total service by physicians increases, and (2) the service by hospitals and visiting nurses decreases. The "poor" evidently get more hospital care and more calls by visiting nurses than the "moderate" and "comfortable" but fewer physicians' calls.

Considering first the care by physician, the "poor" received 2,219 calls per 1,000 total illnesses attended or unattended, and the "comfortable" 3,699 calls, or 67 per cent more care. This difference was entirely due to the greater amount of care paid for by the "comfortable" class; this was nearly three and one-half times that of the "poor" group—2,852 calls per 1,000 illnesses as compared with 869.

<sup>22</sup> Number of cases on an average day. Excludes cases hospitalized 90 days (the entire survey period) which were largely patients in public mental and tuberculosis sanatoriums.

<sup>23</sup> 36; moderate-moderate 31; comfortable-comfortable 27.

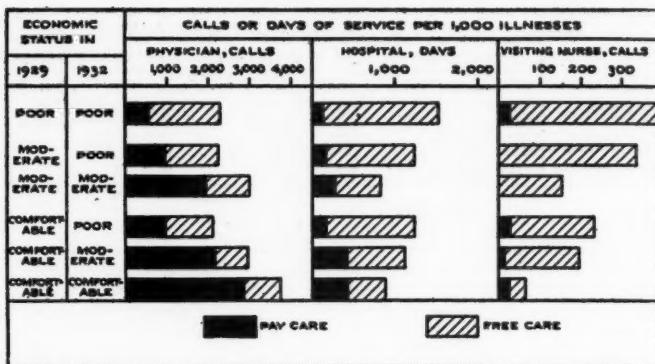


Fig. 3. Service per case, total disabling and non disabling, by physician, hospital, and visiting nurse during a three-month period in the early spring of 1933 in wage-earning families classified according to change in per capita income, 1929-1932, in Baltimore, Birmingham, Cleveland, Detroit, New York, Pittsburgh, and Syracuse.

The "poor" group received more than one and one-half times the free care that the "comfortable" group received. In percentages of the total, 61 per cent of all physicians' calls to the "poor" were free, as compared with 33 per cent for the "moderate" and 23 per cent for the "comfortable."

Considering hospital service exclusive of cases hospitalized the whole ninety days, the "poor" group received 1,304 days care per 1,000 illnesses (attended or unattended); the "moderate" 1,031; and the "comfortable" 855. Thus the "poor" received a 53 per cent greater volume of care than the "comfortable." The "comfortable," however, paid for more hospital care than the "poor;" "comfortable," 423 days, "poor" 173 days per 1,000 total illnesses—or about two and one-half times as much.

Calls by a visiting nurse were practically all free; the "poor" group received 319 calls per 1,000 cases of illness (attended or unattended) as compared with 62 for the "comfortable" group.

### MEDICAL CARE AND CHANGE IN INCOME

The years between 1929 and 1932 witnessed tremendous changes in family income, largely in a downward direction. Not all of the families that were poverty-stricken in 1932 were accustomed to this misfortune. Considering the 12,500 individuals in families classified as "poor" (under \$150 per capita income) in 1932, 23 per cent were poor in 1929, 57 per cent were in moderate circumstances (\$150—424 per capita income) in the earlier year, and 20 per cent were classified as comfortable (\$425 and over per capita income). It is of interest to examine the medical and hospital care received by groups of individuals classified according to economic status in 1929 and in 1932. This has been done in Figure 3. Here, for example, the "poor" group in 1932 is now divided into the "chronic poor" who were poor in 1929 and 1932, and two groups of the "depression poor"—those who were "comfortable" in 1929 but "poor" in 1932 and those who were in the "moderate" class in 1929 but were "poor" in 1932. For the whole group which was "poor" in 1932 (Figure 2) there were received 2,219 physicians' calls per 1,000 cases of illness, of which 39 per cent was pay and 61 per cent free care. From Figure 3, we see that the total amount of physicians' care was about the same for the "chronic poor" as for the newly "poor." However, the "poor" who had been "poor" even in 1929 paid for only 24 per cent of the physicians' calls received while the "poor" who had been in the "moderate" class in 1929 paid for 42 per cent and the "poor" who had been in the "comfortable" class paid for 46 per cent of the total calls received.

Considering hospital care, the whole group which was "poor" in 1932 received 1,304 days per 1,000 cases of illness (hospitalized or nonhospitalized). In Figure 3, it is seen that the "chronic poor" received more hospital service than the

"poor" who had been in better circumstances in 1929—1,531 days per 1,000 cases as compared with about 1,250 days per 1,000 cases for both the "comfortable-poor" and "moderate-poor" groups. Of the hospital service received by the "chronic poor," 92 per cent was free as compared with 85 per cent in both classes of the "depression poor." Apparently the "new poor" had not made as good connection with sources of free care as those who had been in straitened circumstances for a longer period of time.

Care by a visiting nurse showed much the same picture as the hospital care (Fig. 3).

For further comparisons, we may assume that families which showed little change in economic status between 1929 and 1932 obtained in 1932 about the customary<sup>11</sup> amount of medical care for individuals of their income level and social status. With this idea in mind, we may compare, for example, the group "comfortable" in 1929 and 1932 with the less fortunate group which was in similar circumstances in 1929 but was reduced to poverty by 1932—the "comfortable 1929-poor 1932" group.

It is seen from Figure 3 and Table 5 that the "comfortable-comfortable" received a total of 3,745 physicians' calls per 1,000 cases of illness, a volume of service almost twice that of the "comfortable-poor" group which received 2,113 calls per 1,000 illnesses. A similar comparison shows that

<sup>11</sup>"Customary" is not used in the sense of "adequate" medical care but to indicate the volume of service which families of the wage-earning class might be expected to receive. It is possible that 1933 was such an abnormal year that the volume of care received by any class could not be assumed to be the usual amount for more normal years. However, the comparison, rough as it is, seems justifiable.

The care received by all classes surveyed in this survey was far below the standard of adequacy set up after careful study by the Committee on the Costs of Medical Care. (Lee, Roger I.; and Jones, Lewis Webster: *The Fundamentals of Good Medical Care*. Chicago, University of Chicago Press, 1933.)

the "moderate-moderate" group received more calls per 1,000 illnesses (2,998) than the "moderate-poor" (2,241).

Free care constituted 23 per cent of physicians' calls to the "comfortable-comfortable" and 54 per cent of the calls to the "comfortable-poor"; free care was 35 per cent of physicians' calls to the "moderate-moderate" as compared with 58 per cent of the calls to the "moderate-poor."

The groups which suffered no income reduction during the depression obtained twice to three times the volume of paid physicians' calls and about 20 per cent less free calls than their less fortunate neighbors who suffered heavy reverses. The net result was the receipt of considerably more doctor's care by families with unchanged income.

For hospital care, a different relation is evident. The groups which had remained in the "comfortable" or "moderate" class throughout the four years received less total hospital care than the groups of the "depression poor." For example, the "comfortable-comfortable" show 886 days hospital care per 1,000 cases of illness which is about one-third less volume of care than received by the "comfortable-poor" (1,234 days per 1,000 illnesses). The "moderate-moderate" also received about one-third less volume of hospital service than the "moderate-poor"—833 days as compared with 1,243 days per 1,000 illnesses.

Free care was 51 per cent of total hospital days for the "comfortable-comfortable"; 86 per cent for the "comfortable-poor"; 67 per cent for the "moderate-moderate"; and 84 per cent of the "moderate-poor."

The smaller amount of hospital care received by the classes that suffered little change in economic status is entirely due to the small amount of free care received by these groups as compared with the groups reduced to the poverty level during the depression.

Thus, internal comparisons among various groups of the surveyed population indicate that the "depression poor" obtained more free care of all kinds, less total physicians' care, and more total hospital care and care by a visiting nurse than was received by their neighbors who were in similar economic circumstances in 1929 but did not suffer material loss of income during the depression.

#### SUMMARY

This paper presents a preliminary analysis of hospital, nursing, and physician's care received by wage-earning families severely affected by the depression. The data were obtained as part of a house-to-house sickness survey in seven large cities. The results indicate that a very large proportion of the total service received by the group was free. The volume of this free care in various groups of the population classified by income was from 25 to 75 per cent of the physician's calls, 50 to 90 per cent of the hospital days, and 60 to 100 per cent of the calls by a visiting nurse. The "chronic poor," a group which were poverty stricken even in 1929, show the largest percentage of free care and the largest total volume of hospital and visiting nurses' service. Families that had suffered loss of income during the depression (the depression poor) received more hospital care, largely free, than families of similar economic status in 1929 that had not lost income. Total care by a physician was less among the poor than among the moderate and comfortable, but here again the poor received more free care. Internal comparisons among the different economic groups indicate that families reduced to poverty between 1929 and 1932 received more free care of all kinds, more total service by hospitals and visiting nurses, and less physician's care than was received by families which remained in moderate or comfortable circumstances throughout the economic depression.

## THE PRESENT AND FUTURE ORGANIZATION OF MEDICINE

by I. S. FALK<sup>1</sup>

### I

**T**O DAY medicine stands at a crossroad. No one can fully grasp the content of medical science and medical art or foresee the path which the newer knowledge will follow more than a decade hence. No one can fully comprehend the present position of medical practice in society or anticipate the form it is destined to take. This much is clear: Every serious effort to contemplate the course of future developments must draw a clear distinction between the content of medicine and the *form* of medical practice. This distinction may be brought into sharp relief by a few simple illustrations.

A patient appears in a physician's office. How the doctor shall proceed to take the medical history, upon what signs and symptoms he shall make his diagnosis and what course of therapeusis he shall prescribe—these are part of the content of medicine and are wholly within the domain of the physician. A patient comes to a dentist. The examination, the diagnosis, the program of care and treatment, decisions as to the need for cleansing, extraction, prosthesis, or orthodontia, and the performance of the services—these are part of the content of dentistry and are within the province of the dentist.

For its own protection, society has for many centuries regulated the privilege of the individual to hold himself out as a physician. Both in olden times and in modern, society has established standards which must be met by those who

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would qualify as practitioners. The individuals who receive approval are then entrusted to choose the procedures which will best serve each patient in his time of medical need. Physicians and dentists have had, have, and undoubtedly will continue to have, the sole right and duty to decide *what* shall be practised. This, the content of medicine, belongs to the practitioner.

We find another picture when we inquire into the circumstances under which the physician practises and the nature of his economic relations to society or to the individual patient. Everywhere and always, the physician has been a product of his times and the conditions under which he has practised have invariably reflected the customs of the period. In primitive times, he was physician, priest, and magician; in classical times he was variously slave, craftsman, honored citizen, and body-physician at the court of prince, king, or emperor. In early Christian times, in the Middle Ages, during the Renaissance, in the imperial, and in the liberal periods, his roles have been many and varied.

Between 1850 and 1930, the industrial revolution changed the world at a pace which has almost defied understanding or analysis. Simultaneously, medicine made more progress and became more efficient than ever before in history. Medical art and medical practice grew beyond the competence of any individual; and medical specialization—though not new in the world—attained such a state of development as to constitute substantially a new phenomenon in the history of science.

The profound economic changes which came with industrialization (and urbanization) brought colossal forces to play upon medical practice. The number and variety of practitioners grew in a manner hitherto unknown. Tremendous competition developed. Through circumstances which no one

planned and no one foresaw, a profession fell into a business world. In order to survive, medicine began to adapt itself to the world about it. The older order of so-called "private practice" was transformed into a system of competitive practice which no one consciously willed and which in an insidious way has interfered with the great social task which medicine is destined to perform. The practitioners of the healing arts were compelled to become business men and entrepreneurs.

Fifty years ago, the world began to seek an answer to the paradox which the industrial revolution presented to the practice of medicine. In 1883, in an effort to weaken the growing influence of the Social Democrats, the Iron Chancellor gave Germany sickness insurance. Fundamental changes came into the conditions of medical practice—first in Germany and later in the forty countries of the world which followed her lead in establishing compulsory or voluntary systems of furnishing medical care through insurance. Health and sickness insurance evolved in the same period which saw the gestation of modern medicine. In the same year in which sickness insurance was being instituted in Germany (1882), Louis Pasteur published his first communication on rabies and Robert Koch read his classic paper on the etiology of tuberculosis. This coincidence is not cited to prove that insurance against medical costs was responsible for medical advance, but to challenge the converse: The history of medicine since 1882 does not lend itself readily to the argument that the international spread of sickness insurance *impeded* medical progress.

The conditions under which medicine is practised, the nature of the physician's relation to the society of his times, the manner in which he is remunerated—these and other characteristics of the *organization of medicine* have known many patterns. In all countries of the world and for many

centuries, the form of medical practice has been determined by the structure and the customs of society. And this is true in the United States today. In the light of this unquestionable lesson from history, it is absurd for the editor of a leading American medical journal to express the view: ". . . the right to say how medicine shall be practised must remain with the medical profession." The medical profession has not now that "right" any more than they had it in centuries past when physicians were permitted to practise as licensed wanderers, or as the salaried "body-physicians" of kings or princes, or as university faculties. Society has never delegated such a "right" to the medical profession; and today it might be difficult to discover evidences that society contemplates an innovation in this regard.

If the expression quoted above were merely the casual blurb of a journalist, it would be deserving of no specific attention. But it warrants comment because it represents the opinion of a number of self-styled leaders of the medical profession. There are signs everywhere in the United States that profound change impends in the organization of medicine. If physicians, dentists, and other members of the medical professions, are to exert useful and constructive influence, if they are to serve wisely in guiding the practice of medicine to a form of organization more esteemed by society than is the present one, they must take cognizance of the forces which are at work. The medical practitioner must range himself with—and not against—these forces if he would influence the course of events. It is not difficult to imagine the grave consequences which might befall if society should seek a new organization of medicine and did not have the counsel of the medical professions. As surely as the professions determine *what* they shall practice, society determines *how* they shall practice. The interest of lay people is centered

not on what the physician shall practice, but upon how he shall be paid for his services.

II

There is a ferment at work in American medicine. There is a vast unrest; physicians, dentists, nurses, hospital administrators, pharmacists, and others are conscious of a national uncertainty in the future of medical organization. The order of the nineteen-twenties has been under critical fire. This was already clearly evident in 1927 when the Committee on the Costs of Medical Care first came into being. It was concern over the future which brought the Committee into existence as a voluntary organization dedicated to dispassionate investigation of the needs of the times. The economic depression has only intensified the need for action.

To visualize the issues at stake, it is necessary to study the research reports prepared by the staff of the Committee on the Costs of Medical Care. Though there were differences of opinion within the Committee concerning *recommendations*, the *facts* disclosed by the Committee's investigations were accepted by all factions. The data are now a year or two old. But in this, they err only in understating the need for certain obvious changes in the organization of medicine.<sup>2</sup>

Among some groups it has become almost a pastime to lay the blame for the burden of medical costs on the drug store and the cultist. Others frequently imply that most of our troubles would be over if these expenditures were eliminated and other recognized wastes were curtailed. We should not

<sup>2</sup>The factual information and its analysis are available in a single volume: Falk, I. S.; Rorem, C. Rufus; and Ring, M.D.: *The Costs of Medical Care: A Summary of Investigations on the Economic Aspects of the Prevention and Care of Illness*. Chicago, University of Chicago Press, 1933. A brief résumé (*Fundamental Facts on the Costs of Medical Care*, by I. S. Falk) appeared in the *Milbank Memorial Fund Quarterly Bulletin*, April, 1933, xi, No. 2, pp. 130-153.

fall into the habit of taking these delusions too seriously. The obvious savings which are possible would amount to three-quarters of a billion dollars a year, or 20 per cent of the total costs of medical care in a normal year. But to effect savings of these kinds would, in the best of circumstances, be a slow and difficult task. Spending habits are deeply rooted and ignorance is not easily overcome. Even granting that these savings were effected, the facts in the case point conclusively that the major problems of medical costs would still demand other solutions. For the major problems are:

- a. The uncertain, uneven, and unbudgetable size of medical costs for the individual or the family.
- b. The difficulty of knowing how, when, and where to secure good medical care.
- c. The uncertain and inadequate remuneration of practitioners and institutions.

Neither professional nor lay groups will make real progress on issues in medical economics until they recognize that these are the real issues which face the public and the professions and that the three are interlocked, one with another. The professions and the public will be toiling at cross purposes until they realize that each has an equal and fundamental interest in medicine and that the interests of both must be safeguarded in any solution which may be proposed. In principle, it is obviously desirable that any plan designed to equalize costs should also discourage waste. Experience in many places has shown that it is possible to combine these two desirable objectives. Indeed, the success of an organization which equalizes costs depends, in greater or lesser measure, upon the fact that it simultaneously reduces wastes, familiarizes the beneficiaries with the path to authorized medical agencies, and stabilizes the incomes of practitioners. By comparison with what has been and is easily accomplished

in the reduction of wastes through organized medical agencies operating under non-profit insurance plans, reduction in wastes by educational measures alone is costly and ineffective. Proposals to reduce costs and to eliminate wastes must inevitably be linked with proposals to equalize costs among groups of people and over periods of time. In any final sense, the economic and professional needs of modern medicine call for group payment by the public, group practice by the professions, and a conjunction of the two.

### III

The public and the professions are convinced that on the whole "all's well" with the science and the art of medicine. No one knows its destination; but it is on its way and its way seems to be a highroad. But the serenity with which the content of medicine is viewed has no counterpart in the attitude toward the form of medical organization. On the contrary, it is a common belief that, in respect to organization and social relations, medicine is at a crossroad and has not yet found the signpost. The view is extremely prevalent in the public mind; it is almost general among hospital and public health authorities, and it is—to put the matter conservatively—common among the members of the medical professions.

There are two distinct but interrelated questions before society and the professions: Toward what form of organization is medicine heading? How shall it be most wisely guided to a desirable form? Let us consider these in turn.

A vast experimentation is in progress in the United States and in foreign countries. Disregarding details, we can discern at least six major movements:

1. An increasing prevalence of group payment of medical costs. This is notably evident for hospital service and

- has become quite common for care furnished by physicians.
2. An expanding activity of government agencies in furnishing diagnostic and curative as well as preventive care.
  3. An expanding interest of private practitioners in preventive medicine.
  4. A growing tendency toward group—as distinguished from individual—practice.
  5. An increasing demand for the effective control of excessive specialization in the professions.
  6. A widening interest in the possibilities of improving the education of general practitioners and restoring them to a central place among their professional colleagues.

These and other important movements must somehow be fused into a single current. All must be encompassed in any sound program of medical organization for the future. In this country and abroad, many experiments have been (and are being) tried to attain these six objectives. A study of experience suggests that, whatever the near future holds, sound planning must rest upon the following basic principles:

1. The provision of good medical care to all of the population is essential to the nation's well-being.
2. The costs of medical care should be distributed over groups of people and over periods of time, whether through taxation, insurance, or combinations of the two.
3. Those who render medical care should be adequately remunerated.
4. Quality in medical care should not be sacrificed to economy in cost.
5. The medical care of the dependent and indigent sick is an obligation of society.
6. Group payment of medical costs should be restricted to this purpose and should not be combined with insurance against the loss of wages during a period of illness.
7. Group payment of medical costs should embrace all economic groups in the population to whom the private purchase of medical care brings variable costs which are

burdensome and which are incapable of being budgeted on an individual or family basis.

8. The costs of medical care must be distributed according to ability to pay.

9. Group payment of medical costs should be grounded on a compulsory basis.

10. A system of group payment for medical care should not include or permit the operation of proprietary or profit-making agencies or of any independent intermediary between the potential patient and the medical agencies.

Whether we like them or not, an evaluation of European and American experiences reveals that these principles are sound. The form of organization to which medicine is moving should be conceived in these principles. In addition, experience shows that effective operation of a system of compulsory insurance against medical costs requires:

a. Flexibility in the scope of medical benefits so as to permit adaptation to local variations in available personnel and facilities.

b. Professional control of professional personnel and procedures.

c. Freedom of all competent practitioners who subscribe to necessary rules of procedure to engage in insurance practice.

d. Freedom of all persons to choose their physician or dentist from among all practitioners in the community who engage in insurance practice.

e. Freedom of insurance practitioners to accept or reject patients.

f. Minimum interference of the insurance system with the private practice of medicine.

On these premises, the immediate task is to design a form of organization which is in accord with these basic concepts and which will operate effectively.

## IV

How shall we proceed to formulate a program for the place which medicine shall occupy in society? Can it be done by the medical professions alone? There are no evidences in medical writings that medical practitioners have either the training or experience in the social or economic problems which would qualify them to act *alone*. In addition, medical practitioners would be subject to popular suspicion in such an undertaking because they have a large stake in the outcome. Furthermore, the lay world has so profound an interest in the subject that one can anticipate a general revolt against anything which would seem to be dictation to society from the professions. There is an old adage which is pertinent: "He that reckons without his host must reckon again."

Can an adequate program be formulated by the public or by their leaders in government? The answer is written indelibly in history. Bismarck, single-handed, gave Germany sickness insurance; Lloyd-George and his small coterie gave Great Britain national health insurance. The place which medicine shall occupy in the social order has for centuries been determined by the lay world and this can be done again. Unfortunately, there is a very clear lesson in modern history that such action is not in the best interests of society. Success in the operation of any national plan for the organization of medicine has been almost directly proportional to the extent to which there has been professional, conjointly with lay, participation in designing the program. The history of health insurance in European countries is replete with illuminating examples on this point. The role which the British medical professions played in compelling a revision of Lloyd-George's program, before the National Health Bill was enacted and during the first years of its operation, is a case in point. Today, satisfaction with national health insurance is so gen-

eral in Great Britain that no responsible group would propose its abolition. Both the public and the organized medical and dental professions are clamoring for extension of the system. The demand is for more, not for less, national health insurance. And this is especially evident in the official proposals of the British Medical Association.

If we learn anything from history, we must be resolved that the economic problems which confront American medicine should be solved by the joint action of lay and professional groups. Yet we must recognize that if such cooperative action does not become a reality, solutions may be imposed upon both the public and the professions by ambitious politicians or by designing bureaucrats. And these solutions may not be the best which can be designed in the public interest.

Many persons, lay and professional, are convinced of the need and the opportunity for public service in a sound re-ordering of the functional relations of medicine. No good purpose is served by denying existence of the problem or by acrimony between lay and professional groups which have fundamentally common interests. Neither denials nor hard names will create a current or stem a tide. The times call for action and the problems for wise and judicious solutions.

## SICKNESS, UNEMPLOYMENT, AND DIFFERENTIAL FERTILITY<sup>1</sup>

by EDGAR SYDENSTRICKER AND G. ST. J. PERROTT

**T**HAT the birth rate is highest and the family is largest in what we term the "lowest" social class in this country is a fact now well known. The decline in the birth rate has occurred in all classes but this relative difference—the differential birthrate—among social classes has persisted during the depression. That the sickness rate, the prevalence of physical impairments, and the mortality rate are highest in the low-income and so-called "lower" social classes also has been found to be generally true. Recently it has been discovered that wage-earning families which suffered the greatest drop in income during the depression have higher sickness rates than families whose economic status did not change at all or was affected in less degree.

It is easy to yield to the temptation to conclude from these facts that high fertility, ill health, and loss of income during the depression are causally associated, and to proceed to the further deduction that the high birth rate in families which failed most signally or experienced the hardest luck in the severe economic struggle of the past four years constituted a needless handicap to their own welfare and rendered the problem of ill health more acute. Such a process of reasoning would be entirely sound if a basic assumption, necessarily present in the foregoing deduction, were found to be true. This assumption is that high fertility, and loss of income, and ill health actually occurred in the same families within a specified social class. What is needed, therefore, is information on

<sup>1</sup>A paper from the Division of Research, Milbank Memorial Fund, read at the American Conference on Birth Control and National Recovery, Washington, D. C., January 17th, 1934.

births, income, and ill health during the depression for *each* family in groups sufficient in number to yield statistically dependable results. Only in this way can an answer be given to the highly important question: To what extent is size of family, or, more precisely, a high fertility rate associated with inadequate income and ill health in the depression?

This brief paper is a preliminary report upon an attempt to fulfill these requirements in a study of several thousand families. The report is preliminary because not all of the desired analyses of the data have been completed. It does not presume finality or universality in its conclusions because the information upon which it is based is not as detailed nor as complete in every respect as we would have liked, and because it relates only to a group which may not be thoroughly typical in spite of every effort to make it so. The data were collected with care and are, so far as we know, the only information of the kind at present available. The number of families included constitute a considerable sample of urban wage-earners' families in a most unusual period, 1929-1932.

The data were collected in a study of health among those elements of the population which have borne the brunt of the depression. The Milbank Memorial Fund, in cooperation with the United States Public Health Service, undertook a special house-to-house canvass of severely affected districts in ten localities. No attempt was made to select sections that would be representative of any city as a whole; only the poorer districts, exclusive of slums, were canvassed in order to include families of the wage-earning class. In the blocks or streets that were surveyed, every white family was covered, whether employed or unemployed, and whether recently poor or never self-supporting. Those families whose breadwinners still had their jobs were to serve an important role in the study, viz., a control group whose illness and birth rates

would be a yardstick which would be essential in interpreting similar rates found for those suffering economic reverses.

For these families the following information was secured, in addition to other data that are not relevant here: (1) a record of occupation, wage-earners, regularity of employment, and amount of income in each year from 1929 through 1932 in sufficient detail to compute family income; (2) a record of births, with dates, to each mother, the exact age and date of marriage of the mother; (3) a record of illness during a period of three months in the late spring of 1933. The method of this study has been described elsewhere<sup>2</sup> and we shall not refer to it in further detail here. The results, so far as they relate to the subject under discussion, may be summarized as follows:

First, as regards income and income changes in 1929-1932. The average annual income of this group of urban wage-earning families in 1929 was approximately \$1,700, only one-third of them having incomes of less than \$1,200. In 1932, these families averaged only \$900, three-fourths of them had less than \$1,200, about one-fifth were actually on relief, and many others had no means of support.

Second, as regards ill health as indicated by sickness. The highly significant fact was revealed by the surveys in each of the localities that the sickness rate in 1933 was more than 50 per cent higher in families whose incomes had dropped most sharply during the preceding four years than in families which remained in the higher income class. The illness rate was also found to be relatively great in families without employed workers, less in families with part-time workers only, and still less in families with full-time workers. It may be remarked that these illness rates excluded sicknesses begin-

<sup>2</sup>Perrrott, G. St.J. and Collins, S. D.: *Sickness and the Depression*. The Milbank Memorial Fund *Quarterly Bulletin*, October, 1933, xi, No. 4, pp. 281-298.

ning before the period of record, in the late spring of 1933, and thus had little if any connection with any ill health that caused unemployment in earlier years. In fact, ill health as a cause of unemployment was relatively unimportant in comparison with lack of work. The differential illness rates appeared at each age period and for both respiratory and non-respiratory conditions with the exception of communicable diseases. A further inquiry into the diets of samples of these families showed that the food supply of wage-earning families with low incomes due to the depression was considerably under the minimum recommended by most nutritional authorities. In fact, carefully conducted medical examinations of about 1,000 school children from families in areas severely affected by the depression in New York City and Pittsburgh showed there was a direct association between malnutrition and low income and drop in income.

The findings in this study as regards loss of income and sickness, which have been summarized only in bare outline here, point definitely to the conclusion that, insofar as illness is an indication, the health of persons comprising families seriously affected by the depression is being impaired.

In the third place, then, let us consider the birth rates during the depression in these families which have had various economic experiences and which were found to differ so widely with respect to condition of health in 1933.

The records for 8,000 families in eight cities have been tabulated to a point where we may state in general terms the relationship between birth rate, economic and social class, and change in economic status during the four years 1929-1932. It should be kept in mind that these 8,000 families all belong to the social classes ordinarily designated as unskilled laborers, skilled laborers, and the white-collar group. Relatively few had incomes of over \$3,000 even in 1929. This

group, as may be expected, has a birth rate which is higher than that of the general population. Its average annual birth rate per 1,000 married women aged 15 to 44 years for 1929-1932 was 152 as compared with 126 for the United States birth registration area.<sup>3</sup> The difference between the birth rate of the surveyed group and that of the urban population is undoubtedly even greater.

The differential rate according to social class was found to persist (Table 1). The birth rate in families of unskilled laborers was 182, in families of skilled laborers 150, and in the white-collar class 134. If income be used as a general index

Table 1. Birth rate and social and employment status, 1929-1932<sup>1</sup>.

SOCIAL AND EMPLOYMENT STATUS	BIRTH RATE <sup>2</sup> PER 1,000 MARRIED WOMEN AGED 15-44	BIRTHS 1929-1932	NO. YEARS RE- CORDED 1929-1932 WOMEN AGED 15-44
<i>Unskilled Labor</i>			
No employed workers	182	586	3,792
Part-time workers	234	154	702
Full-time workers	166	263	1,775
	169	169	1,315
<i>Skilled Labor</i>			
No employed workers	150	2,173	14,436
Part-time workers	188	318	1,655
Full-time workers	152	1,183	7,374
	134	672	5,407
<i>Salaried Workers</i>			
No employed workers	134	559	4,312
Part-time workers	167	59	337
Full-time workers	153	173	1,142
	120	327	2,833
<b>TOTAL</b>	<b>152</b>	<b>3,318</b>	<b>22,540</b>

<sup>1</sup>For population groups canvassed in Birmingham, Baltimore, Cleveland, Detroit, Greenville, New York City, Pittsburgh, and Syracuse.

<sup>2</sup>Adjusted for age.

<sup>3</sup>All of the birth rates here used are the average annual number of births per 1,000 married women in the age period 15-44 years, standardized for age according to the 1930 age distribution of total married women in the United States who were aged 15-44 years.

of efficiency and success as well as social class it was found that the birth rate in families with less than \$1,200 annual income in 1929 was 175 as compared with 115 in families having \$2,500 or more (Table 2). The lower income class thus had a birth rate over one and one-half times that of the higher.

Considering now the birth rate in relation to change in income and employment status, some extremely interesting facts are revealed. They may be summarized as follows:

(1) Classifying families with \$2,000 annual income or more as "comfortable," those from \$1,200 to \$2,000 as "moderate," and those with less than \$1,200 as "poor," we find that the highest birth rate (178) was in families which were poor in 1929 and continued in that condition through 1932, a rate 66 per cent higher than that in families who stayed in relatively comfortable circumstances (Table 3). However, the rather significant indication also appeared that the birth rate in families whose economic status dropped from "moderate" to "poor" during the depression was higher (157) than that in families who continued in "moderate" circumstances (110) throughout the four years. This difference is considerable, the rate for families whose income changed being 39 per cent higher than that for families whose income did not change. Even that group of families whose economic status changed from "comfortable" to "poor" apparently had a considerably

Table 2. Birth rate 1929-1932 and income in 1932<sup>1</sup>.

INCOME	BIRTH RATE PER 1,000 MARRIED WOMEN AGED 15-44 <sup>2</sup>	BIRTHS 1929-1932	NO. YEARS RECORDED 1929-1932 WOMEN AGED 15-44
Under \$1,200	176	428	2,526
\$1,200-\$1,999	145	572	4,198
\$2,000-\$2,499	124	140	1,484
\$2,500 and over	115	102	1,171

<sup>1</sup>For population groups canvassed in Baltimore, Cleveland, New York, and Syracuse.

<sup>2</sup>Adjusted for age.

ECONOMIC STATUS IN		BIRTH RATE <sup>2</sup> PER 1,000 MARRIED WOMEN 15-44 YEARS OF AGE	BIRTHS 1929- 1932	NO. YEARS RE- CORDED 1929-1932 WOMEN AGED 15-44
1929	1932			
Poor	Poor	178	406	2,404
Moderate	Poor	157	448	2,994
Moderate	Moderate	113	118	1,152
Comfortable	Poor	133	143	1,287
Comfortable	Moderate	104	75	831
Comfortable	Comfortable	107	37	537

<sup>1</sup>For population groups canvassed in Baltimore, Cleveland, New York, and Syracuse.

<sup>2</sup>Adjusted for age.

Table 3. Birth rate and change in economic status, 1929-1932.<sup>1</sup>

higher birth rate (133) than those who in 1932 were found to be in the "comfortable" class (107).

(2) When the employment status of the families in 1932 is considered, it is found that the birth rate in families without employed workers was 197 as compared with 154 in families with part-time workers only, and 134 in families with one or more full-time workers. Thus, the families without any employed workers in 1932 had a birth rate *during the depression* 48 per cent higher than those which had one or more full-time workers in 1932.

This situation appeared for both the wage-earning and the salaried, or white-collar, classes (Table 1).

(3) We were able to make a further tabulation, for presentation in this paper, of families in four cities with less than \$1,200 in 1932 from the point of view of the receipt or non-receipt of relief (Table 4). The birth rate in families which were receiving relief in 1932 was 210 as against 137 in families which were not receiving relief. Thus, the average annual birth rate in families on relief was 53 per cent higher than in those not on relief, even in this low-income class. Doubtless families with more children, especially infants, were singled

RELIEF STATUS IN FAMILY	BIRTH RATE PER 1,000 MARRIED WOMEN 15-44 YEARS OF AGE <sup>a</sup>	BIRTHS 1929-1932	NO. YEARS RECORDED 1929-1932 WOMEN AGED 15-44
Relief	210	538	2,481
Non-relief	137	572	4,513

<sup>a</sup>For families with less than \$1,200 in 1932 in the population groups canvassed in Baltimore, Cleveland, New York, and Syracuse.

<sup>b</sup>Adjusted for age.

Table 4. Birth rate 1929-1932 and relief status in 1932.<sup>1</sup>

out by welfare agencies for greater attention than smaller families, or families without infants, but the fact remains that the higher birth rate in these poor families is directly related to the necessity for public and private charity.

To summarize: The findings in the surveyed group of families show that the birth rate was highest during the depression in families which were without employment or on part-time work in 1932. Furthermore, if the birth rate is studied in connection with income changes during the depression, it appears that high fertility was associated with inability to succeed in the severe competition for jobs brought about by the depression. Thus, if the economic history of families in a given income group in 1929 is followed through to 1932, we find that those which had dropped from comparative comfort in 1929 to poverty in 1932 were families having a higher birth rate than those which did not suffer a drop in income.

Low social status, unemployment, and low income in 1932 went hand in hand with a high illness rate and increased malnutrition among children. It was in these same groups of families that a high birth rate prevailed. Whatever the broad implications of the findings may be, it is evident that a high birth rate during the depression prevailed in families which could least afford, from any point of view, to assume this added responsibility.

## TUBERCULOSIS CASE-FINDING IN THE RED HOOK AREA OF NEW YORK CITY<sup>1</sup>

by JEAN DOWNES

**H**OW to locate unknown foci of infectious tuberculosis within a given area is an important problem in the control of tuberculosis. The death rate from the disease serves as an indication, though relatively crude, of the amount of active tuberculosis occurring within certain population groups and may be utilized to point out the need for intensive case-finding. Death rates by small areas in New York City revealed the fact that specific areas are contributing in a greater degree than others to the total tuberculosis mortality of the City. For example, the average annual tuberculosis death rate for Central Harlem during 1929-1931 was 275 per 100,000 population for colored and 175 for white, compared with a rate of 36 in a near-by area of Manhattan; the Red Hook district of Brooklyn had a rate of 232 and 96 for colored and white respectively, compared with 38 in the adjacent area of Bay Ridge.<sup>2</sup> Knowledge of these facts led the Department of Health of New York City to initiate in two areas (Harlem and Red Hook) where the death rate was

<sup>1</sup>From the Division of Public Health Activities, Milbank Memorial Fund. This investigation, under the general direction of Dr. Shirley W. Wynne, Commissioner of Health of New York City at that time, and Dr. D. Clifford Martin, director of the Division of Tuberculosis, was carried out as one of the work projects for medical and nursing service, under an appropriation by the State Temporary Emergency Relief Administration. Supervision was furnished by members of the staff of the Department of Health, but the rest of the personnel (medical, nursing, and clerical) was taken from doctors, nurses, and others applying for assistance. The Milbank Memorial Fund cooperated in this project by a grant of funds and personnel. Grants were also made by the National Tuberculosis Association and certain individuals. This analysis of the statistical results of the investigation has been made by the Division of Research of the Milbank Memorial Fund at the request of Commissioner Wynne.

<sup>2</sup>Areas of High Mortality During 1929-1931. Department of Health, City of New York, and Committee on Neighborhood Health Development.

extremely high, a new type of investigation for the discovery of tuberculosis; that is, the examination by X-ray (paper film) of individuals from relief families rather than examining a random sample population from each area or a population composed of children selected by means of the tuberculin test.<sup>3</sup>

The plan of this special experiment in finding tuberculosis was (1) to examine by X-ray members of all families on home relief in the two areas; (2) immediate follow-up of all diagnosed cases and examination of family contacts of all diagnosed cases. Since some of the findings, mainly for the Harlem area, have been presented,<sup>4</sup> this report concerns itself primarily with the results of the X-ray examinations and follow-up of cases and family contacts in the Red Hook area of Brooklyn.

By means of the X-ray, those individuals in whom the tubercle bacilli have brought about an anatomical change in the lungs can be detected within a reasonable range of accuracy provided the X-rays are read with a fair degree of precision. Consequently, the examination by X-ray of a population sufficiently large for stability of results may indicate the actual prevalence of pulmonary tuberculosis at different ages and within what age groups tuberculosis occurs most frequently; data which have been lacking and which

<sup>3</sup>It should be stated that paper films are not quite so accurate for the detection of pulmonary lesions as are celluloid films, but they have proved serviceable for diagnostic purposes and may be advantageously used for large groups of children or adults. Amberson, J. Burns Jr., M.D.; Barnard, Margaret Witter, M.D.; Loew, Marion Franklin, M.D.: Comparative Value of Paper and Celluloid Films for Roentgenograms of the Chest. Transactions of the Twenty-Eighth Annual Meeting, National Tuberculosis Association, 1932.

<sup>4</sup>Barnard, Margaret Witter: The X-ray in Tuberculosis Case-Finding. The Milbank Memorial Fund Quarterly Bulletin, July, 1933, xi, No. 3, pp. 233-239.

Barnard, Margaret Witter: The X-ray in Tuberculosis Case-Finding. The Transactions of the Twenty-Ninth Annual Meeting, National Tuberculosis Association, 1933.

are of fundamental importance to those interested in tuberculosis as a public health problem.

#### RESULTS OF THE X-RAY EXAMINATION IN RED HOOK<sup>5</sup>

The data reported upon in this paper represent a sample population drawn from members, 15 years of age and older, of the families on home relief in the Red Hook section of Brooklyn. The sample consists of 962 Negro and 8,938 white persons.<sup>6</sup> A sample population drawn from relief families cannot be considered strictly representative of the total population of the Red Hook area. Neither can it be considered as representing only the indigent for under normal conditions many of these families would not be in the relief group. In general, the families examined are probably fairly typical of wage-earning families in the lower income classes to be found in normal times in the congested areas of New York City.

Table 1 shows the prevalence of important tuberculosis found at different ages among the white and Negro indi-

<sup>5</sup>The X-ray survey in Brooklyn, made during April and May, 1933, was under the direct supervision of Dr. Israel Steinberg, who at that time was supervisor of Consultation Chest Clinic Services in the New York City Department of Health. The reading of each X-ray was checked by Dr. Steinberg and questionable cases were taken up with Dr. J. Burns Amberson, attending physician, Tuberculosis Service, Bellevue Hospital, who served as consultant at the Bellevue-Yorkville Health Center. The follow-up clinic was set up and supervised by Dr. Steinberg.

The diagnoses relative to tuberculosis were classified as follows: 1. important tuberculosis (needing investigation); 2. suspect tuberculosis (investigation for diagnosis); 3. healed tuberculosis (no investigation) and 4. non-tuberculous pulmonary lesion (investigation). Small calcified lesions, Gohn tubercles, or lesions indicated by several fibrotic strands, were classified as healed tuberculosis. More extensive fibrosis, signs of infiltration, or of recent tuberculosis, all lesions which seemed to be of actual or potential danger to the individual were included under important tuberculosis.

<sup>6</sup>A small proportion of the total white persons (1,565) came from relief families in Bay Ridge section adjoining Red Hook.

COLOR AND SEX	AGE GROUPS					
	All Ages <sup>1</sup>	15-19	20-29	30-39	40-49	50 Plus
PER CENT						
White—Total	3.2	.8	2.2	3.3	4.2	5.2
Male	3.3	.5	1.8	3.1	5.0	5.1
Female	3.0	1.0	2.5	3.4	3.1	5.4
Colored—Total	2.3	0	2.2	2.5	2.4	3.6
Male	2.0	0	.9	2.5	2.1	4.0
Female	2.7	0	3.1	2.5	2.8	3.3
NUMBER OF CASES						
White—Total	282	10	42	78	82	70
Male	157	3	15	40	56	43
Female	125	7	27	38	26	27
Colored—Total	22	0	6	8	4	4
Male	9	0	1	4	2	2
Female	13	0	5	4	2	2
NUMBER X-RAYED						
White—Total	8,934	1,325	1,907	2,388	1,969	1,345
Male	4,717	641	825	1,275	1,130	846
Female	4,217	684	1,082	1,113	839	499
Colored—Total	942	81	269	314	167	111
Male	460	48	110	157	95	50
Female	482	33	159	157	72	61

<sup>1</sup>Adjusted per cents obtained by applying the per cent for each age group to the age distribution of the combined colored and white population.

Table 1. Per cent of 9,876 persons in Red Hook found by X-ray to have important tuberculosis classified by sex, age, and color.

viduals in Red Hook classified according to sex.<sup>7</sup> The rates for white males show a definite increase with age, from less than 1 per cent among individuals aged 15-19 to approximately 5 per cent for those aged 40 and over. The rates for white females rise from 1 per cent in the age group 15-19

<sup>7</sup>Important tuberculosis includes all lesions which seemed to be of actual or potential danger to the patient; only the obviously healed lesions were excluded from this classification.

to 5.4 in the age group 50 and over. The prevalence of tuberculosis among the Negroes shows the same tendency to increase with age. However, the age specific rates for Negroes

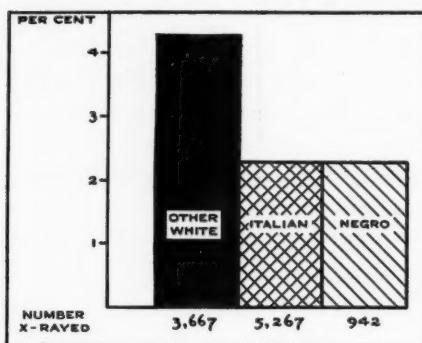


Fig. 1. Percent of persons, 15 years of age and over, classified as having "important" tuberculosis for individuals of Italian parentage, for all other whites and for Negroes in families on home relief in Red Hook district of New York City.

tuberculosis for individuals of Italian parentage, all other whites and Negro, as shown in Figure 1.<sup>8</sup> For the group "other whites" the rate (4.3 per cent) is practically double that recorded for the Italian and Negro, both of which are equal—namely, 2.3 per cent. It should be emphasized that while the differences between the rates for "other whites" and Italian and "other whites" and Negro respectively are identical, the reasons for these differences cannot be considered as identical. The low rate among Italians is probably due to less frequent occurrence of tuberculosis in

<sup>8</sup>Data concerning parentage and nativity were secured for the individuals X-rayed in Red Hook. The 941 Negro persons were for the most part native born of native-born parents. Of the 8,938 white persons, 5,270, or 59 per cent, were of Italian parentage; the remaining 41 per cent were chiefly distributed as follows: 33 per cent of native-born parents, 15 per cent of parents born in

(continued on page 139)

are for the most part lower than for the white group. Also, the rates for all ages both male and female are somewhat lower for the Negro than for the white.

Since the white group was heavily weighted with Italians, it is of interest to make a comparison of the total prevalence of important

this group than among other whites since Italians generally have a relatively low tuberculosis death rate.<sup>9</sup> On the other hand, it is an indisputable fact that the Negroes have an extremely high mortality from tuberculosis when compared with any group of white individuals. The low rate of tuberculous disease among Negro individuals revealed by a survey of this sort is probably due to the excessive operation of two factors affecting both mortality and morbidity, that is, more rapidly progressive disease and a much higher fatality rate among Negro than among white persons.<sup>10</sup> Consequently, case-finding surveys would seem a less effectual method of attacking the tuberculosis problem among Negro than among white persons unless such surveys are made with great frequency. It might be added that frequent surveys of Negroes would be desirable, not only to discover new cases but also because the already discovered tuberculosis would be more

Ireland, and 12 per cent in the Scandinavian countries. Among those of Italian parents, one-third were native born and the remainder foreign born; the foreign-born Italians were found chiefly in the ages over 30. Among the 3,655 with parentage other than Italian, slightly more than half the persons over 30 years of age were foreign born.

<sup>9</sup>Data are available showing the average annual tuberculosis mortality by nativity in New York City for 1930-1931. The rate of 53 per 100,000 among Italians is considerably lower than the rate of 71.9 for other whites and 250 among colored. Data taken from *Weekly Bulletin*, Department of Health, New York City, October 8, 1932.

<sup>10</sup>Everett, Franklin R.: The Pathological Anatomy of Pulmonary Tuberculosis in the American Negro and in the White Race. *The American Review of Tuberculosis*, May, 1933, xxvii, No. 5, pp. 411-464.

Pinner, Max and Kasper, Joseph A.: Pathological Peculiarities of Tuberculosis in the American Negro. *The American Review of Tuberculosis*, November, 1932, xxvi, No. 5, pp. 463-491.

Pathological studies of tuberculosis among Negro and white individuals indicate that "Tuberculosis pursues a more rapidly fatal course in the Negro than in white people. The childhood type of pulmonary tuberculosis with caseous tuberculosis of tracheo-bronchial lymph nodes occurs in nearly half of Negro adults but in only a small percentage of white adults who have died from pulmonary tuberculosis."

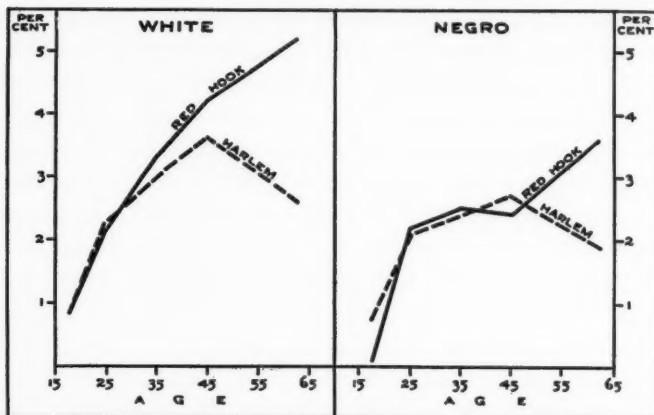


Fig. 2. Prevalence of "important" tuberculosis at specific ages among white and Negro families in Red Hook and in Harlem districts, New York City.

apt to go on to progressive disease in Negroes than it would in white persons.

It is of interest to compare the prevalence of important tuberculosis at different ages for the sample population of Red Hook with that drawn from Central and East Harlem. The age specific rates shown in Figure 2 are strikingly similar for each group by color except for persons over 49 years of age where the rate for white and Negro respectively in Red Hook is almost twice as high as that for the same age and color groups in Harlem. This difference can hardly be attributed to a unique condition as to tuberculosis among persons 50 years of age and older in either one or the other area, but rather to a difference of opinion among those interpreting the X-ray findings as to the importance of tuberculosis after age 50.<sup>11</sup> The general agreement in the findings in two widely

<sup>11</sup>That this may be due to a difference of opinion is confirmed by the fact that if the healed tuberculous lesions found by X-ray are added to "important tuberculosis," the decided difference between the Harlem and Red Hook find-

(continued on page 141)

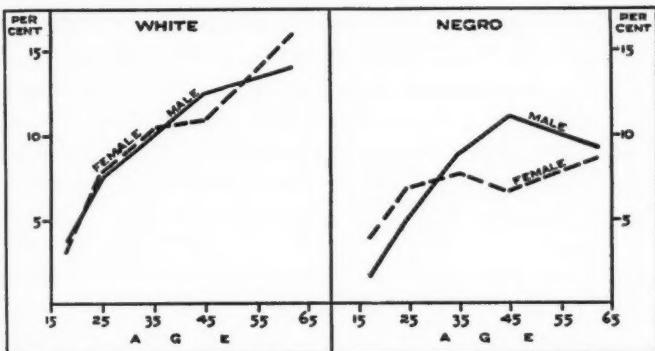


Fig. 3. Prevalence of all tuberculous lesions detected by X-ray by sex and at specific ages among white and Negro families. Data for Red Hook and Harlem are combined.

separated districts, but made up of families living under somewhat the same general conditions, affords convincing evidence that the results may be taken as characteristic of similar population groups in New York City.

The implication of the data presented in this study is that for the most part tuberculous lesions, designated as important tuberculosis (clinical tuberculosis and extensive fibrosis), are acquired during adult life and the prevalence increases throughout life. For example, the rate for white males at age 40-49 is almost three times that for age 20-29 and ten times the rate among males 15-19 years of age. It is a significant fact that the increase in prevalence with age remains (Fig. 3) even though all lesions detectable by X-ray are included, that is healed and important tuberculosis.<sup>12</sup> Conse-

nings among older people no longer exists for either white or colored. The rates are almost identical, namely: White, Harlem 14 and Brooklyn 15; Colored, Harlem 9 and Brooklyn 8, per 100 persons X-rayed.

<sup>12</sup>Figure 3 shows the age curve of total lesions by sex for the combined populations of Red Hook and Harlem according to color. The rates are based upon 13,740 white and 4,397 Negro persons. The differences in the age curves for white and Negro will be discussed in a subsequent article.

quently, the increase in prevalence of important tuberculosis with age cannot be attributed wholly to the lighting up of old lesions but probably is in part due to the acquisition of new tuberculosis. These data have an important bearing upon case-finding procedures in that they show strikingly that important tuberculous disease is found with increasing frequency among persons of adult ages.

#### RESULTS OF FOLLOW-UP OF DIAGNOSED CASES AND FAMILY CONTACTS<sup>13</sup>

A special follow-up clinic was established for the twofold purpose of (1) securing a complete clinic examination of all cases of tuberculosis and other diagnoses needing investigation discovered through the survey and (2) to secure the examination of all family contacts of tuberculosis cases as speedily as possible.

The follow-up of individual cases applied to the following: 328 cases of tuberculosis classed as needing investigation, 93 cases of suspect tuberculosis for whom either a positive or negative diagnosis should be made, and 181 cases diagnosed as having a non-tuberculous pulmonary lesion which needed further investigation. The clinic examination consisted of a sputum test, physical examina-

Table 2. Clinical diagnosis of 272 cases of tuberculosis after clinic examination.<sup>1</sup>

Clinical Diagnosis	Number	Per Cent
TOTAL CASES	272	100.0
Tuberculosis:		
Minimal	196	72.1
Moderately advanced	28	10.3
Advanced	18	6.6
Undiagnosed	9	3.3
Reversed	21	7.7

<sup>1</sup>Fifty-six additional were not examined in clinic. They were classified on the basis of the paper film as follows: 41 minimal, 3 moderately advanced, and 6 advanced tuberculosis, 6 unclassified.

<sup>13</sup>Data for white and Negro families are not tabulated separately for the analysis of follow-up.

tion, X-ray when considered important by examining physician, the tuberculin test for children under 16, and special tests, such as a Wassermann, when necessary.

Table 3. Diagnosis of 73 cases of suspect tuberculosis after clinic examination.<sup>1</sup>

Clinical Diagnosis	Number	Per Cent
<b>TOTAL CASES OF SUSPECT TUBERCULOSIS</b>	<b>73</b>	<b>100.0</b>
Tuberculosis:		
Minimal	16	21.9
Moderately advanced	0	0
Advanced	0	0
Childhood Type	1	1.4
Undiagnosed	21	28.8
Non-Tuberculosis	35	47.9

<sup>1</sup>Twenty additional cases of suspect tuberculosis did not have a clinic examination but were reclassified on the basis of the paper film—7 were classified as minimal tuberculosis.

Tables 2 and 3 show the classification of the clinical diagnoses for cases of tuberculosis and suspect tuberculosis. It is interesting to note that 72 per cent of the 272 cases of tuberculosis examined in clinic (Table 2) were classed as minimal and only 17 per cent as moderately advanced or advanced. Three per cent were undiagnosed and for approximately 8 per cent the diagnosis was reversed. Twenty-two per cent of the 73 suspects examined in clinic (Table 3) were diagnosed as minimal tuberculosis and one case was diagnosed as childhood type.<sup>14</sup>

The examination of household contacts should have applied only to contacts of tuberculosis cases but the examination of contacts was started simultaneously with the follow-up of the cases and the contacts of all cases whether tuberculous or non-tuberculous were asked to come to clinic for an examination. This meant that 424 members of 207 families were examined in clinic even though there was no justification

<sup>14</sup>An additional 5 (4 minimal and 1 childhood type) cases of tuberculosis were diagnosed among the 181 cases classified as having a non-tuberculous pulmonary lesion.

AGE GROUPS	TOTAL FAMILY CONTACTS	PER CENT	
		Examined	Not Examined
TOTAL FOR 543 FAMILIES			
All Ages	1,873	64.8	35.2
Under 20 years	1,166	58.9	41.1
20-49	558	74.7	25.3
50+	149	73.8	26.2
282 FAMILIES—PRIMARY CASE MINIMAL			
All Ages	966	68.1	31.9
Under 20 years	607	64.6	35.4
20-49	281	74.4	25.6
50+	78	73.1	26.9
54 FAMILIES—PRIMARY CASE ADVANCED OR MODERATELY ADVANCED			
All Ages	171	77.2	22.8
Under 20 years	104	73.1	26.9
20-49	49	79.6	20.4
50+	18	94.4	5.6
207 FAMILIES—PRIMARY CASE, SUSPECT TUBERCULOSIS FOUND NEGATIVE AND NON-TUBERCULOUS LESIONS			
All Ages	736	57.6	42.4
Under 20 years	455	48.1	51.9
20-49	228	74.1	25.9
50+	53	67.9	32.1

Table 4. Per cent of family contacts examined in 543 families, classified according to types of primary case in family.

from either the survey or clinic findings for the examination of family contacts.

For purposes of analysis the families in which the contacts were examined have been grouped according to the clinical diagnosis of the primary case discovered through the survey as follows: 282 families in which the primary case was mini-

AGE GROUPS	PER CENT				NUMBER				
	Tuberculosis			Suspects	Tuberculosis Found				Suspects
	Minimal	Mod. Adv.	Ch. Type		Contacts Exam.	Minimal	Mod. Adv.	Ch. Type	
TOTAL FOR 543 FAMILIES									
All Ages	.6	0	.3	1.6	1,214	7	1	4	19
Under 20 years	.1	0	.6	2.0	687	1	0	4	14
20-49	.7	0	0	1.2	417	3	0	0	5
50+	2.6	.9	0	0	110	3	1	0	0
282 FAMILIES—PRIMARY CASE MINIMAL									
All Ages	.6	0	.3	1.5	658	4	0	2	10
Under 20 years	0	0	.5	1.5	392	0	0	2	6
20-49	1.0	0	0	1.9	209	2	0	0	4
50+	3.5	0	0	0	57	2	0	0	0
54 FAMILIES—PRIMARY CASE MODERATELY ADVANCED OR ADVANCED									
All Ages	0	0	0	3.8	132	0	0	0	5
Under 20 years	0	0	0	5.3	76	0	0	0	4
20-49	0	0	0	2.6	39	0	0	0	1
50+	0	0	0	0	17	0	0	0	0
207 FAMILIES—PRIMARY CASE, SUSPECT TUBERCULOSIS FOUND NEGATIVE AND NON-TUBERCULOUS LESIONS									
All Ages	.7	.2	.4	.9	424	3	1	2	4
Under 20 years	.5	0	.9	1.8	219	1	0	2	4
20-49	.6	0	0	0	169	1	0	0	0
50+	2.8	2.8	0	0	36	1	1	0	0

Table 5. Tuberculosis cases diagnosed among contacts in 543 families, classified according to type of primary case in family.

mal tuberculosis, 54 families in which the primary case was advanced or moderately advanced tuberculosis, and 207 families in which the primary case was a suspect found nega-

tive or a non-tuberculous lesion.<sup>15</sup> Table 4 shows the total contacts by broad age groups and the per cent examined in each group of families. From 58 to 77 per cent of the total contacts were examined in the different family groups, the highest proportion examined being in the 54 families with an advanced or moderately advanced case. A higher proportion of the contacts over 20 years of age than under 20 was examined in all three family groups.

Table 5 shows the number of cases diagnosed among family contacts in each group of families. It is plainly evident that the original survey revealed practically all of the cases in these families. No new cases were discovered in the 54 families with advanced or moderately advanced tuberculosis and only .9 and 1.3 per cent in the minimal and non-tuberculous respectively. However, it should be noted that a higher proportion of contacts (3.8 per cent) in the moderately advanced or advanced families was classed as suspects than in the other two groups with 1.5 (minimal families) and .9 per cent (non-tuberculous families).

The results of the analysis of the follow-up of cases and examination of contacts would seem to indicate that in a case-finding survey of this type, the examination of contacts should be made only in a more highly selected group of families. This selection might better be made after a detailed clinical study of the primary cases in order to determine activity and infectiousness. Otherwise, the examination of contacts may prove relatively ineffective as a case-finding procedure.

<sup>15</sup>It should be pointed out that the occurrence of more than one primary case in a family as discovered in the general survey was rare. Out of the 543 families considered only 5 were multiple case families, 1 in the 282 "minimal" families and 4 of the 54 families with an advanced or moderately advanced case. In all 5 families the cases occurred in both husband and wife.

## A PROJECT IN RURAL SCHOOL HEALTH EDUCATION

by RUTH E. GROUT

### II. BUILDING THE PROGRAM<sup>1</sup>

THE project in rural school health education initiated in Cattaraugus County, New York State, in the fall of 1931, had as its principal goal the building of a program of health teaching adapted to the needs, experiences, and interests of rural children.

The preliminary steps in this project were summarized in a previous article. They included the formulation of basic policies in accord with the philosophy of progressive education and the development of an organization which would facilitate teacher participation in building the program.

Early in the project, intensive classroom experimentation in health teaching was started in selected schools to test out the applicability of the policies which previously had been formulated and to create a mass of suggestive health teaching material which might be organized and made available to other schools. This curriculum-building project grew so rapidly that within a year's time enough material had been assembled to be arranged into a tentative "Handbook of Health Education." At the present time this handbook is being used experimentally in all of the one- and two-teacher schools of Cattaraugus County as well as in a control group of about 100 schools outside of the County, where it is serving to motivate the production of additional teaching material adapted to these schools.

<sup>1</sup>From the Cattaraugus Supervisory School Hygiene District and the Division of Public Health Activities, Milbank Memorial Fund. This is the second of a series of papers by the director of the health education study in Cattaraugus County.

Several methods have been employed to stimulate individual teacher participation in this curriculum-building process. Each of the teachers was first provided with a tentative list of health aims or objectives against which she might check the specific needs of her school. These objectives, developed more or less arbitrarily with the assistance of specialists in health and education, were stated in terms of habits, attitudes, and knowledge to be desired among rural children in lower and upper elementary grades. Every effort was made to base them on recognized rural problems and on pupil needs and interests.

A questionnaire booklet, called the "School Health Study," also was placed in the hands of each teacher to help her to determine the health problems of her school. The questions in this booklet are so arranged that a continuous three-year record may be kept of outstanding health conditions of pupils, school, and homes.

Additional aid has been given the teachers in the form of reference materials, supervisory assistance, and interchange of experiences by means of conferences and mimeographed bulletins.

Since in this curriculum-building project the health activities carried on by individual teachers epitomize the trend of the program in general, a description of a few of these activities will be given. They will be divided into those fundamentally based on individual problems of pupil, school, or community, approached in an individual manner, and those based on general problems approached through comprehensive learning experiences or units of work.

In the past a very common device to encourage better health habits of individual pupils has been the morning "inspection" with its modifications. When conducted on a competitive basis and kept alive by awards or other artificial

motivations, it rightly has been challenged by many educators. They see in it elements which are foreign to the ideals of progressive education and which tend to encourage such undesirable mental attitudes as dishonesty and feelings of inferiority. The teachers of Cattaraugus County, although continuing their daily observation of the pupils for signs of communicable disease, are seeking to replace the traditional "inspection" with methods which will stimulate pupil interest in self-directed growth.

One school is keeping a card catalogue of individual records to accomplish this end. Each child has his own section of the catalogue. On one of his cards, he has a list of habits he himself has selected as needing special attention. On another card, he checks one or more of these habits each day for a monthly record. The pupils are enthusiastic over this plan which gives each an opportunity to watch his own individual growth.

In a school where the keeping of individual records was started recently, one older girl remarked, "Why, Miss Clarke, you were checking me on something I was doing anyway. I'd lots rather check myself on things I need." This girl was trying to develop the habit of keeping her fingers out of her mouth, far more important from the standpoint of health than having a perfectly combed head of hair.

School clubs, such as "Good Citizenship" or "Jolly Sportsman's" clubs have used similar self-checking records to advantage.

Pupil participation in meeting individual problems of schoolroom sanitation is being aroused in various ways. Here, too, the school club frequently serves a very important function. A typical club is made up of committees which take charge of many of the activities about the school such as the care of water supplies, toilets, room cleanliness, playground

equipment, and the like. Discussions of committee reports form an important part of club-meetings.

A wide-awake teacher is continually on the alert to enlist pupil assistance in the solution of school health problems. In one school, a study of lighting led the children to suggest that trees outside the windows be trimmed, that seats be removed or rearranged, and that sash curtains be drawn back to admit more light. These suggestions were carried out with the assistance of the pupils.

Communicable disease problems in a school usually demand individual attention. Because of the many factors involved, it often is difficult to find positive evidence of instances where education in prevention has produced tangible results. A unique opportunity came to one teacher, however, who found herself in charge of a tiny school with three pupils. A study of attendance records from the previous year revealed that one of the pupils had been absent a great deal because of colds. This teacher's success in bettering the pupil's condition is vividly described in excerpts from her diary.

"Oct. 20. William has a cold. He attended a neighborhood dance on Saturday, October 15, became too warm and stepped outdoors for a few minutes. Everett was there and did not catch cold. I used that fact to get the idea of cod liver oil across. Everett had used it constantly for over two years and had probably developed cold resistance.

"Nov. 8. William has another cold. I cannot find out any place where he might have caught it for he was away from home but once and then met no one who had a cold. However, he arose at four o'clock in the morning and rode six miles on horseback in a fog to get help for his mother who was ill.

He said he did not get chilled, but that his feet were cold all the way and he did not get them warm until he returned.

"During the winter attention was given to keeping school room temperature down to 68 degrees. An unsuccessful effort was made to obtain cod liver oil for William. He was free from colds until the middle of February when company visited his house and he had to sleep on a couch. Proper foods and good health habits were encouraged during the year. William had no more colds after February. Since he ate plenty of vegetables and fruits and drank milk this year, his resistance gradually may have increased."

Contrast with this another school in which over half the children were victims of whooping cough. Here was an unusual opportunity to truly educate in healthful living, yet the teacher appeared to feel that her duties had ended when she had read to the group the section on disease prevention in a ten-year old edition of a health text. A visitor at this time observed three pupils drinking out of a common glass placed conveniently near the water container, and another wiping her hands on what appeared to be a common towel. Fortunately, such occurrences are rare. More and more teachers are realizing that the community needs their assistance in coping with problems of communicable disease.

Many individual health problems such as sleep, wearing of proper clothing, and wise use of playtime are largely the responsibility of the home. The school, however, may take an active part in changing attitudes and arousing interest of parents and children. One teacher who was somewhat alarmed with the frequent absences from colds in his school and the type of clothing worn by some of the pupils recently wrote a letter to the parents on the matter. In this letter he called attention to the fact that every absence meant a decrease in public money received by this school. After citing

some of the causes for absences, he enlarged upon the possible relationship between the incidence of colds and the wearing of heavy rubber boots both indoors and out. He urged the parents to provide each child with a supply of clean handkerchiefs and to cooperate with him in seeing that they were used properly at home as well as at school. He reports marked improvement in these conditions.

In another school the mothers are invited each month to attend a party of the school club. Here they learn what the children are doing in health as well as in other fields of activity. The teacher reports, "An instance of the cooperation of parents was shown in the following. After we had discussed and pointed out how much better school work a child can do when his eyes are taken care of, one parent obtained glasses for his child. Just now we are preparing for a Washington Party and are inviting the parents. The pupils are planning the menu with regard to healthy foods and they will cook and serve the food." Other similar efforts to bring about warmer relations between the home and school are producing equally splendid results. In these endeavors the teachers in this County are finding sympathetic allies in the public health nurses.

In addition to activities conducive to developing desirable health behavior, many teachers believe that the curriculum should include activities that will give each child a broad understanding of the reasons for such behavior. To illustrate, these teachers are not satisfied that the children shall merely form the habit of drinking milk. Important as this is, they feel that basic understandings and appreciations should be built up within the children, to the extent that as they grow older, they intelligently will choose to drink milk, even under difficulties, because they recognize its nutritive value. So with other health problems that challenge powers of dis-



*The teachers are seeking to replace "morning inspection" by stimulating self-directed health habits*

1. clean  
2. clean  
3. clean  
4. fresh  
5. fresh

The school health educational program stresses the importance  
of cleanliness.



*Sanitary facilities for bandaging are being installed in  
the schools cooperating in the project*



*The unsanitary equipment in these schools is being rapidly discarded*

crimination and judgment. Enlightened teachers, realizing that values will change with the development of future knowledge, make it their obligation to prepare their pupils to solve these problems in whatever future settings they may meet them. In Cattaraugus County, there is a growing tendency among the teachers to seek to accomplish this end with the older children by means of broad learning experiences, or units of work, in which the children themselves participate in varied activities which widen their horizons of understanding.

Health problems serve as the principal foci of interest in some units of work. Such is the case in the study of a school child's diet or of the need for pure water. Health may be secondary to the central theme in other units, as, for example, when home life among the people of the far north is being studied, or light, with all its various angles of approach is under consideration. An important phase of the present school health education project has been to experiment in individual classrooms with the introduction of health problems through both types of units. A future article will deal with units in more detail, but a few typical examples will serve to illustrate how they have been utilized in the study of general health problems.

The desire for an adequate water supply in her school led one teacher to work out with her pupils a detailed unit on water. Wells and springs in the community and the public supply system of a neighboring village were investigated and discussed. Two boys with the aid of a chalk box, sand, clay, and a copper rod, made a model of a drilled well in which the sand and clay layers corresponded to the soil layers near the school. Special care was given to constructing a tight cover over this well. In geography the problem of drainage in its relation to pure water supplies was studied. The pupils

then began to give thought to drinking and handwashing habits and equipment at school. As a result of this intensive study, the dirty washbasin in the corner, the old galvanized pail and dipper, the ever-soiled glass drinking cups have been supplanted by an attractive porcelain sink, a sanitary water cooler, and paper cups. Now the children wash their hands to the tune of a victrola. Two parties were given in a neighboring hall to help raise money for this equipment and willing aid was offered by trustee and parents. That the awakening of this community is not yet complete was evident when, at one of these parties, the dancers used an old "family dipper" to quench their thirst.

The study of the home and the family, a unit frequently developed with primary children, abounds with opportunities to integrate health. In more than one school this has been visualized by the building of a doll house and the care of dolls. In a recent visit to a little group, which consisted largely of girls, the children were found busily occupied bathing their dolls. The question of dressing the dolls had already raised the problem of suitable clothing for the different seasons of the year, while the appreciation of cleanliness was directly in evidence. With this natural interest already aroused, the teacher hoped to lead on to further study of family life. In one typical school where this was done, the building of a doll house gave opportunity to stress the need of plenty of fresh air and sunshine, of comfortable sleeping quarters, and of proper food. The success attained in such endeavors to stimulate wholesome attitudes toward health through indirect channels is largely dependent upon the background of the teacher and the degree to which she herself has developed a wholesome, well-integrated personality which makes possible friendly, sympathetic relations with her pupils and community.

The examples related above are characteristic illustrations of methods used by teachers of Cattaraugus County to meet the health problems of their schools. They represent the type of material incorporated in the "Handbook of Health Education." This, in its present state of development, offers suggestions for meeting individual problems of pupils, school, and community, skeletal material for building units and sample units which have been worked out in actual classroom situations. Whatever the approach has been, these teaching efforts have sought to translate health knowledge into health practice.

Thus it may be seen that the isolated contributions of individual teachers are being gradually woven into a coherent plan. This curriculum-building program is still in the process of development. As it slowly expands, may it continue to embody the philosophy so cogently expressed by Dr. John Dewey in the words, "Since growth is the characteristic of life, education is all one with growing; it has no end beyond itself. The criterion of the value of school education is the extent in which it creates a desire for continued growth and supplies means for making the desire effective in fact."<sup>2</sup>

<sup>2</sup>Dewey, John: *Democracy and Education*. New York, The Macmillan Co. 1919.

## HOW MANY PUBLIC HEALTH NURSES ARE NEEDED?<sup>1</sup>

A METHOD OF ESTIMATING THE NURSES NEEDED IN HOME  
VISITING FOR HEALTH SUPERVISION OF CHILDREN

by MARIAN G. RANDALL, R.N.

**A**NY estimate of the number of nurses needed for the various activities of a city health department obviously must be based on recognized standards of practice. The Appraisal Form<sup>2</sup> has been the usually accepted standard. Thus, methods have already been suggested for estimating the nursing requirements in communicable disease control, clinic service, school health service, and the like.<sup>3</sup> In home visiting for the health supervision of children, estimates ordinarily have been made for each age group separately. In the method suggested here an attempt has been made to take into account (1) that children of one age group are combined in families with children of other ages, (2) that a visit in the home offers an opportunity to combine services to children of various age groups to the extent to which there are two or more children in the families of a given community, and (3) that a health supervision program can be most effectively carried out if the family is considered as a unit.

The discussion summarized in this paper grew out of the making of plans for district health administration in New York City. One part of this plan was illustrated by a pro-

<sup>1</sup>From the Division of Public Health Activities, Milbank Memorial Fund.

<sup>2</sup>The Appraisal Form for City Health Work, by Committee on Administrative Practice, third edition. New York, American Public Health Association, 1929.

<sup>3</sup>Community Health Organization, edited by Ira V. Hiscock for the Committee on Administrative Practice of the American Public Health Association, New York, 1932.

<sup>4</sup>Winslow, Emma A., Ph.D.: The Measurement of Nurse Power. *The Public Health Nurse*, October, 1927, xix, No. 10, pp. 492-498.

posed program for the Mott Haven district, including estimates of the personnel needed to carry out all phases of the health work. It was convenient to use the data collected for this health plan and for other special studies, and the method suggested here is illustrated by an estimate of the nurses needed for the Mott Haven district in New York City.

#### CONTENT OF A SAMPLE OF FAMILIES

The census of a random sample of a thousand families was part of the information collected by a special investigator who visited unselected homes on many different streets in the Mott Haven district. Using only the families with children, we have a sample of 723 families. In these families were 1,582 children; 99 infants, 518 preschool children, and 965 school children.<sup>4</sup> The way in which children of different age groups were combined in the families is shown in Table 1.

It will be noted in this table that 18 per cent of the infants did not have older brothers or sisters. When the nurse visited these infants it would not be possible to include visits to other children. It will be noted next that 40 per cent of the infants had siblings of preschool age. In these homes there would be an opportunity to combine infant visits with preschool visits. It is also shown that 13 per cent of the infants had brothers or sisters of school age, and 28 per cent had both preschool and school siblings, indicating the opportunity of combining visits for two other age groups. In a like manner, Table 1 indicates the per cent of the preschool children that have brothers and sisters; and also the same information for the school group. Since this is a random sample of families, these percentages may be applied to the numbers of children in the total population and for our purposes indicate approximately the way in which the children are combined in the families of the entire district.

<sup>4</sup>Infants under 1; preschool 1-5; school 6-14 years of age.

AGE GROUPS OF CHILDREN <sup>1</sup>	No. OF FAMI- LIES	CHILDREN IN THE FAMILIES					
		Infants		Preschool		School	
		Num- ber	Per Cent	Num- ber	Per Cent	Num- ber	Per Cent
TOTAL	723	99	100.0	518	100.0	965	100.0
Infants only	18	18	18.2				
Infants with pre- school	40	40	40.4	56	10.8		
One preschool						4.6	
Two + preschool						6.2	
Infants with school	13	13	13.1			17	1.8
One school							.9
Two + school							.8
Infants with pre- school and school	28	28	28.3	42	8.1	58	6.0
Preschool only	115			159	30.7		
One preschool						13.7	
Two + preschool						17.0	
Preschool with school	219			261	50.4	394	40.8
One preschool						29.3	
Two + preschool						21.1	
One school							4.5
Two + school							36.3
School only	290					496	51.4
One school							7.6
Two + school							43.8

<sup>1</sup>Infants under one; preschool 1-5 years; school 6-14 years.

Table 1. Composition of a random sample of families with children, in the Mott Haven District, New York City.

It has not been customary to tabulate information about children in families in this manner. The Federal Census material has not been tabulated this way, although for the first

time the 1930 census material is published on a family unit basis. From the many different studies now being undertaken it would be quite possible to gather enough material to find an average experience of the way in which children of different ages are combined in families. It would be possible also to use the information from a sample of families known to a health organization. Such material might also be used as an index of the extent to which the full opportunities of home visiting were utilized.

#### ESTIMATING TIME REQUIREMENTS

*Time Spent in Visiting.* Before going into the details of the number of children of each age in the population of Mott Haven, let us consider how the combination of visits in a home affects the time spent in home or so-called field visiting. It is customary in most organizations for the nurse to report her work as two visits if she visits two people in the same family. A visit to an infant and a preschool child in the same family is reported as an infant visit and also as a preschool visit. It has also been customary to report the time per visit by dividing the total time by the number of visits. This results in a crude average time for length of visits of all types, which does not make it possible to estimate accurately the time needs for a specific service under a generalized plan of visiting. For in applying this average we assume that when two persons are visited in a family it takes twice as much time as for one; that four patients take twice as much time as two.

If, however, the work of the organization is of such nature that by far the greatest number of nursing visits are to families where there is only one patient, the method yields reasonably accurate cost and time data because the errors introduced into the reckoning by two or more persons being

visited in the same family may be so small that they have no practical bearing on the result. But in a generalized program of health supervision, if all opportunities are utilized and services are extended to as many members of the family as possible, the method appears to be inaccurate. So much of the content of the health supervision visit is similar for the infant and two preschool children in a family, for example, that it will probably not take three times as long to make this visit as it does to make the visit in a home with only one child.

A few time studies have been made which take account of this fact. In an unpublished study in East Harlem Nursing and Health Center in 1925, by May Ayres Burgess, it was found that in their generalized program it took an average of twenty-two minutes when one member of a family was visited, but an average of fifteen minutes per visit when two persons were visited and an average of eleven minutes per visit for three visits in the same family. It was pointed out in this study that making a home visit requires a certain minimum amount of time regardless of how many persons there are to be visited. If there is more than one member of the family to be visited more time must be added, but the number of added minutes decreases each time an additional member of the family is seen.

Another time study which took account of combination of visiting in a family was made in Cattaraugus County.<sup>5</sup> The results were very similar to those found in East Harlem, but the Cattaraugus figures were given separately by types of services. For infant, preschool, and school visits it took an average of twenty-one minutes if only one person was visited; fifteen minutes per visit for two visits in a family;

<sup>5</sup>Gamble, L. A.; and King, F.: Length of Visits in a Generalized County Nursing Service. *The Public Health Nurse*, November, 1929, xxi, No. 11, pp. 567-570.

and an average of ten minutes per visit for three visits in a family. Since our discussion is confined to the health supervision of children and is dealing with an official service, it was decided to use the Cattaraugus figures in illustrating the method of estimating the nurses needed.

**Travel Time.** It takes just so long to travel between households regardless of how many visits are made when the home is reached. Thus, travel time per home visited is really more accurate than per individual visit. Here again few time studies have considered this detail. The result of one study that seemed suitable to use was a study of travel time of the Syracuse City Health Department nurses which showed that the travel time per household was 8.5 minutes.<sup>6</sup>

**Record Time.** In reporting the distribution of the nurse's total time spent in various services it is usual to report separately the time spent in record keeping. It has been estimated that this averages from 15 to 20 per cent.<sup>7</sup> Perhaps the largest part of this time is devoted to the records of home visiting. Clinic records are usually included in clinic time and school records are written in the schools and usually included in the time spent in schools. There may be some variations in practice in just what records are made out in the time recorded as "record time," but it may be suggested that if the per cent of nurses' total time that is devoted to records is added after an estimate is made of the time required for field visits it will probably be more accurate than to assign the time for records on a per visit basis.

#### ESTIMATING NUMBER OF NURSES NEEDED

In Table 2, an estimate of the nurses needed is related to

<sup>6</sup>Travel Time between Calls for Two Months in 1928. Report of the Nursing Service in the Annual Report of the Health Department in City of Syracuse, 1928.

<sup>7</sup>Winslow, Emma A.: *The Measurement of Nurse Power. Op. cit.*

**METHOD OF ESTIMATING THE NUMBER OF NURSES REQUIRED FOR GENERALIZED HOME VISITING  
FOR HEALTH SUPERVISION OF CHILDREN**  
(Illustrated for Mott Haven District, New York City)

Table 2.

Type of Health Supervision Service	Average Case Load <sup>1</sup>	Age Groups of Children <sup>2</sup>	Per Cent of Specified Load	Number of Children of Specified Age	Minutes Per Visit <sup>3</sup>			Total Minutes in Homes	Total Household Visits	Total Minutes Traveled Time <sup>4</sup>	Total Hours Visits and Travel	Total Nurses Needed <sup>5</sup>
					One Person	Two Persons	Three Persons					
Infant	4,313 births	Infant only	18.2	785	3,140	21	15	65,940	3,140	62,640	4,176	2,796
		Infant with preschool (1)	24.2	1,044	4,176	2,796	15					
		Infant with preschool (2)	16.2	669	1,568	1,568	15					
		Infant with school (1)	9.1	392	688	688	10					
		Infant with school (2)	4.0	172	4,884	4,884	10					
Preschool	19,000	Infant with preschool and school	28.3	1,221	17,252	17,252	15	235,780	146,642	17,252	6,373.6	3.2
		Total	100.0	4,313								
Preschool	Appraisal Form Standard: 4 visits per case for 30 per cent of cases	Preschool (1) with infant	4.1	1,044	4,176	21	15	62,640	—	62,640	—	—
		Preschool (2) with infant	4.1	1,398	5,692	5,692	10					
		Preschool with infant and school	4.1	1,221	4,884	4,884	10					
		Preschool only (1) (13.7)	4.1	779	3,116	21	15					
		Preschool only (2) (17.0)	5.1	969	3,876	3,876	15					
		Preschool with school (1) (17.7)	7.0	1,330	5,320	5,320	15					
		Preschool with school (2) (32.7)	13.0	2,470	9,880	9,880	10					
		Total	48.4	9,311	36,844	36,844	15					
		School (1) with infant	4.8	392	1,568	1,568	15					
		School (2) with infant	4.8	344	1,376	1,376	10					
School	Appraisal Form Standard: one visit per case for 40 per cent of cases	School with infant and preschool	4.8	1,221	4,884	4,884	10	49,576	30,254	30,254	3,587	172.159
		School (1) with preschool	5.2	1,330	5,320	5,320	15					
		School (2) with preschool	5.2	4,940	19,760	19,760	10					
		School only (1) (7.6)	3.0	1,230	1,230	21	15					
		School only (2) (43.8)	17.5	7,175	7,175	7,175	10					
School	41,000	Total	40.5	16,632	41,313	41,313	15	107,625	4,817	49,575	4,446	4.4

<sup>1</sup>Population of Mott Haven district, 234,033. Number of children estimated from 1930 Federal Census.

<sup>2</sup>Infant under 1; preschool 1-5½; school 6-14 years of age.

<sup>3</sup>Gamble, L. A., and King, F.: Length of Visits in a Generalized Community Nursing Service. *The Public Health Nurse*, November 1929.

<sup>4</sup>Time Study for Field Visits in East Harlem Nursing Service, May Ayres Burgess, unpublished.

<sup>5</sup>Since 40 per cent of school children should be visited, estimates are made for 40 per cent of the children in school families.

<sup>6</sup>Assuming 2,000 hours of service per year for each nurse.

<sup>7</sup>Appraisal Form for City Health Work by Committee on Administrative Practice, third edition (New York, American Public Health Association, 1929).

<sup>8</sup>Appraisal Form p. 55-57 calls for 4,000 visits per 1,000 live births where infant mortality rate for past 3 years has averaged 51½%.

<sup>9</sup>Since 40 per cent of school children should be visited, estimates are made for 40 per cent of the children in school families.

service for each age group of children based on the population of the Mott Haven district and the Appraisal Form standards of practice.

*Home Visiting for Infants.* There were 4,313 births in this district in 1931. The infant mortality rate was 55 in 1930 and 53 in 1931. The Appraisal Form standard is four visits per case for 100 per cent of the cases, or 4,000 visits per 1,000 live births where the infant mortality rate for past three years has averaged 51.75. Applying our information about the way in which children are combined in families, we estimate that 18 per cent, or 785 of the 4,313 infants, will be in homes without other children. Four visits per case for these 785 infants is 3,140 visits. Since there are no other children in the family, they will probably be one-person visits, and will require an average of 21 minutes per visit, or a total of 65,940 minutes. The travel time for these visits is 8.5 minutes for each of the 3,140 household visits.

Next are the 40 per cent of the infants who have siblings in the preschool age. Twenty-four per cent of infants are in families having only one preschool child. These 1,044 infants will require 4,176 visits, which, if full opportunity is used, will be two-person visits requiring 15 minutes per visit or a total of 62,640 minutes. The travel time is estimated for 4,176 visits, but will not have to be counted again when providing for the preschool visits in these families. The remainder of the infants who were combined with the preschool group, 16 per cent, were in families where there were two or more preschool children. The home visits to these infants could be combined with two preschool visits, or three-person visits requiring 10 minutes per visit.

Another 13 per cent of the infants were in families in which there were school children, and the same method has been used, as shown in Table 2, in estimating the visits to

these infants and in estimating for the time required according to the number of children that could be visited in the home.

The group of infants who were born into homes in which there were also children of both preschool and school age represent 28 per cent of the total, or 1,221 infants. Visits to these infants could be combined with visits to at least two other children, and the time per visit reckoned accordingly.

For the total infant group, according to the standards quoted, it is estimated that 6,374 hours of service, including travel time, should be provided. Assuming 2,000 hours of service per year for each nurse,<sup>8</sup> this means 3.2 nurses for home-visiting for health supervision of these infants.

*Home-Visiting for Preschool Children.* There are approximately 19,000 preschool children in this district. The Appraisal Form standard gives four visits per case for 30 per cent of the cases.

The preschool children in the same families with infants represent 19 per cent of the total preschool children. The travel time required for visits to these households has already been provided for in the estimate for infant services. It is necessary to provide for the additional time needed in the home for the visits to the preschool children. This is 15 or 10 minutes per visit according to the number of children visited in the same family.

Referring again to Table 1 we find that 30 per cent of the preschool children do not have brothers and sisters in other age groups. Thirteen per cent in this group are only children and the other 17 per cent have siblings in the same age group. Estimating, according to the standard, for 30 per cent of these cases, we have 779 children requiring 3,116 visits which

<sup>8</sup>Winslow, Emma A.: *The Measurement of Nurse Power. Op. cit.*

will be one-person visits requiring 21 minutes each; and 969 children requiring 3,876 visits which could be two-person visits requiring 15 minutes each.

The remainder of the preschool children are in families in which there are school children. Since the Appraisal Form calls for services to 40 per cent of the school children, estimates are made for 40 per cent of the preschool children in these families, and the same method is used in estimating the time required to make the required number of visits. While the total per cent of preschool children provided for is 48 per cent (shown in Table 2) instead of the standard 30 per cent, this estimate based on combination of services still calls for fewer nurses than when services are considered separately. The preschool children have frequently been called the neglected group in health work and it is undoubtedly true that service to this group could be greatly increased by utilizing the full opportunities presented when giving service to other age groups. It is estimated that for this population 5.4 nurses could give more than the standard home-visiting service if the full opportunities were utilized.

*Home-Visiting for School Children.*<sup>9</sup> There are approximately 41,000 school children in this district. The Appraisal Form standard calls for one visit to 40 per cent of these children. As shown in Table 2, 5 per cent of the total school children could have been visited in infant families and another 15 per cent in preschool families. With the exception of adding the extra minutes required in the home for these two- or three-person visits, these services have been provided for.

Fifty-one per cent of the total school children will not have

<sup>9</sup>Experiments in the Bellevue-Yorkville district in New York City in providing consultation services in the schools have eliminated a large part of home-visiting for school children. While it has reduced travel time, it has increased the number of contacts with parents. Probably the same amount of time should be allowed for this phase of the nursing service for school children.

siblings of younger age groups. Nursing service must be provided for 40 per cent of this group. As shown in Table 2, 1,230 of these visits will be one-person visits and 7,175 will be two-person visits. Travel time for these visits must be allowed.

The total hours for home-visiting for school children is estimated as 8,965 hours which would require the time of 4.4 nurses.

It is recognized that in using this method, as illustrated, there are several assumptions: first, that the standards of practice set up by the Appraisal Form are applicable to the situation; second, that the estimates of time from a limited number of studies are applicable; and third, that every visit in a home will be a generalized visit. All of these assumptions may be only partially true. The first was made because the Appraisal Form standards are those generally accepted and the second because the time studies are the only ones available. Before any precise estimate of nursing needs can be made it will be necessary to make many more studies of time distribution in public health nursing activities, and more studies of standards of practice particularly as regards the distribution of services.

Although the suggested method is limited to one phase of activities and is considered only as a first step in the making of more accurate estimates of nursing needs, it is based on two known facts; (1) that there are two or more children in many families, and (2) a visit in the home offers an opportunity to extend nursing services to the family group.

# A STUDY OF THE CHINESE POPULATION<sup>11</sup>

by CHI-MING CHIAO

## CHAPTER IV MARITAL CONDITION

### AGE AT MARRIAGE

THE marriages contracted during the enumeration year in the Chinese families under observation afford an interesting opportunity for studying the age and frequency of marriage in North and in South China. In the 10,832 farm families of the twenty localities for which these data were collected<sup>12</sup> there were 1,158 persons who were married for the first time. Table 13 shows the distribution of these cases by age at marriage for each sex, and Table 14 and Figure 6 give the same data in percentage form.

The outstanding fact exhibited by these data is that of early marriage. About 5 per cent of the persons of each sex married before they were 15 years of age. For ages after 15, however, the distribution of males and females differ sharply. Of the women, about two-thirds married at ages between 15 and 20, and about one-fourth between 20 and 25, while the number of those who married after 25 years of age was almost negligible. In some parts of China, there are few girls who remain unmarried after they are 20, and those who do find it

<sup>11</sup>From the Department of Agricultural Economics of Nanking University, and the Division of Research, Milbank Memorial Fund. This study was made in cooperation with the Land Utilization Project financed by the China Council of the Institute of Pacific Relations. The first three chapters of Mr. Chiao's study were presented in the October and January issues of the *Quarterly* and the remaining chapters will appear in the July issue.

<sup>12</sup>The two localities for which information concerning marital condition was not collected were Cheng Hsien, Honan Province, North China; and Tetsing Hsien, Chekiang Province, South China.

AGE (Years)	CHINA		NORTH CHINA		SOUTH CHINA	
	Male	Female	Male	Female	Male	Female
Under 15	22	37	17	25	5	12
15-19	187	461	64	186	123	275
20-24	183	175	46	47	137	128
25-29	47	16	12	7	35	9
30-34	14	—	10	—	4	—
35-39	7	1	4	—	3	1
40 and over	4	—	2	—	2	—
Unknown age	—	4	—	1	—	3
TOTAL	464	694	155	266	309	428

Table 13. Age at marriage distribution for persons of each sex who married for the first time during the year studied; 10,832 farm families, 20 localities, 11 provinces, China, 1929-1931.

difficult to get married. For men the marrying period was longer. About two-fifths of them married between 15 and 20, and another two-fifths between 20 and 25, but almost one-sixth of them married after 25. Inability to make the necessary financial arrangements probably was the chief cause for the relatively large proportion of later marriages among the men.

Table 14. Percentage age-at-marriage distribution for person of each sex who married for the first time during the year studied; 10,832 farm families; 20 localities, 11 provinces, China, 1929-1931.

AGE (Years)	CHINA		NORTH CHINA		SOUTH CHINA	
	Male	Female	Male	Female	Male	Female
Under 14	4.8	5.4	10.9	9.4	1.6	2.8
15-19	40.3	66.8	41.3	70.2	39.8	64.7
20-24	39.4	25.4	29.7	17.7	44.3	30.1
25-29	10.1	2.3	7.7	2.7	11.3	2.1
30-34	3.0	—	6.5	—	1.3	—
35-39	1.5	0.1	2.6	—	1.0	0.3
40 and over	0.9	—	1.3	—	0.7	—
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0

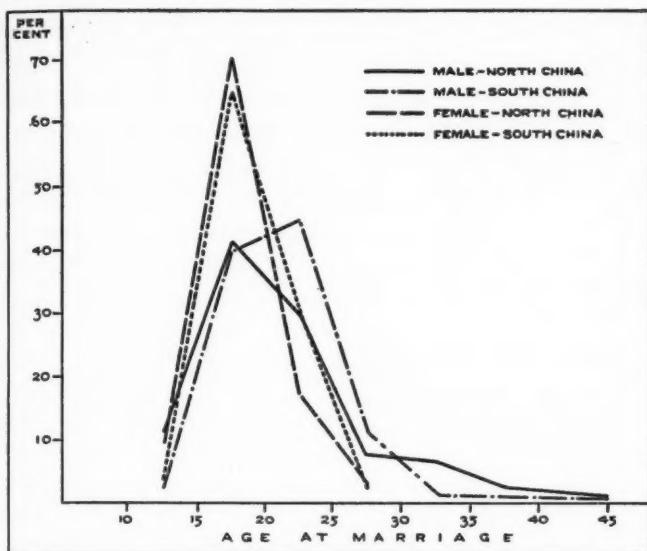


Figure 6. Percentage age-at-marriage distribution for persons of each sex who married during the year studied; 10,832 farm families, 20 localities, 11 provinces, China, 1929-1931.

Early marriage is much more common in North than in South China. In the North, nearly one-tenth of the women who married were less than 15 years old, and only about one-fifth were 20 or more, but in the South, less than 3 per cent were under 15, and one-third were 20 or older. The custom of early marriage also exists among men of the North. More than 10 per cent of them were less than 15 years old, as compared with less than 2 per cent in the South. Evidently, however, poverty in the North is a powerful deterrent to early marriage among the men, for in spite of the larger proportion of marriages at ages under 20, there was also a larger proportion at ages from 30 on. Since this large proportion of relatively late marriages in the North has a powerful influence on the mean age at marriage, the mean ages do not give an ade-

quate summary picture of the situation. (Table 15.) For this purpose the modal (or most frequent) ages for marriage are more satisfactory. They indicate that the most popular marriage age for each sex is two years earlier in the North than in the South, where the figures are 20 years for the males and 19 years for the females.

A comparison of the ages at marriage of women in China with those in other countries will help us to understand the differences in their birth rates. Early marriage is much more common in China than in any other country for which the data are presented in Table 16. Almost three-quarters of the Chinese women marry before they are 20. Of the six Occidental countries shown, Italy had the largest proportion of marriages under 20 and there this amounted to about one-

Table 15. Mean and modal ages at marriage of persons who married for the first time during the year studied; 10,832 farm families, 20 localities, 11 provinces, China, 1929-1931.

Region	Mean Age		Modal Age	
	Male	Female	Male	Female
China	20.19	18.82	20	17
North China	21.00	18.14	18	17
South China	21.28	19.25	20	19

Table 16. Percentage age-at-marriage distribution of women in various countries.

COUNTRY	YEAR	UNDER 20	20	25	30	40	ALL AGES UNDER 50
			TO 24	TO 29	TO 39	TO 49	
China	1929-						
	1931	72.2	25.4	2.3	0.1	—	100.0
England and Wales <sup>1</sup>	1920	8.3	45.4	27.3	14.9	4.1	100.0
France <sup>1</sup>	1920	12.2	41.5	25.2	16.7	4.4	100.0
Germany <sup>1</sup>	1925	7.3	46.2	28.4	14.6	3.5	100.0
Italy <sup>1</sup>	1920	21.3	39.3	26.6	10.7	2.1	100.0
Sweden <sup>1</sup>	1920	7.3	40.6	29.3	18.7	4.1	100.0
Australia <sup>1</sup>	1920	12.4	42.2	26.8	15.1	3.6	100.0

<sup>1</sup>Thompson, W. S.: *Op. cit.* p. 93.

fifth of the total, while in Sweden and Germany, they were only 7 per cent of the total. On the other hand, from two-fifths to one-half of the women in Western countries married after they were 25, while in China less than 3 per cent were that old. The averages tell the same story. (Table 17.) That for China, 18.82, is most nearly approached by 21.4 for a selected sample of rural women in the United States who married during the first decade of the century. At the other extreme is that for Swedish women in 1921, which is 26.59.

#### MARRIAGE RATE

The marriage rate used in this study is the number of first marriages contracted per 1,000 population living at the end of the year.

It is impossible, however, to more than approximate it because of the manner in which the data were collected. The enumerator in each village was told to record all marriages which took place during the year among all the people who were members of the family at any time during the year. Therefore, in each case where a marriage

Table 17. Mean age at marriage of women in various countries.

Country	Year	Mean Age at Marriage
China	1929-1931	18.82
United States <sup>1</sup>	1900-1905	21.4
France <sup>2</sup>	1911-1920	23.67
Italy <sup>2</sup>	1921	24.33
Australia <sup>3</sup>	1930	25.49
England and Wales <sup>2</sup>	1921	25.52
Sweden <sup>2</sup>	1921	26.59

<sup>1</sup>Notestein, Frank W.: Differential Age at Marriage According to Social Class. *The American Journal of Sociology*, July 1931, xxxvii, No. 1, pp. 22-48. The average quoted is for a sample of native-white rural women who married under 40 years of age.

<sup>2</sup>Thompson, W. S. *Op. cit.*, p. 93.

<sup>3</sup>Official Year-Book of the Commonwealth of Australia, No. 24, 1931. H. J. Green, Government Printer, Canberra, p. 700.

involved the moving of one spouse from one residence to another in the same village, that spouse's marriage was recorded twice, once in the family left and once in the family joined.

Similarly, if the spouse left or came into a survey village to marry, the event was recorded; so that for all persons whose marriage involved a change of residence there was what amounts to a double entry. This situation applies to all the girls except those who were living in their husbands' families as fiancees prior to their marriage and a very small number whose husbands joined them in their own homes. The number of women whose marriages were recorded does not, therefore, indicate the number of marriages.

The number of marriages recorded for males is a fair approximation to the number of marriages since the men seldom changed their residence when marrying. The rates shown in Table 18 for China were obtained by dividing the number of first marriages of males recorded during the year by the total population. Since the rates shown for other countries include second and succeeding marriages as well as first ones, the Chinese rates are doubtless somewhat too low. They are 7.86 for all China, 6.59 for the North, and 8.71 for the South. That for China is about the same as the rates for Japan, England and Wales, and Sweden, and is lower than those for Soviet Russia and the United States.

## CHAPTER V THE BIRTH RATE

### CRUDE BIRTH RATE

THE crude birth rate is not an adequate instrument with which to predict the future growth of a population because the number of births is influenced by a variety of factors such as the age, sex, and marital composition of the population and the specific fertility of married women. Since these factors are to a limited extent indepen-

dent of each other, prediction is likely to be more accurate if each one is given special study. For any particular time, however, the crude birth rate is the only measure of the actual

Table 18. Marriage rates for North and South China and for various other countries.

Country	Year	No. of Marriages per 1,000 Population
China	1929-1931	7.86
North China	1929-1931	6.59
South China	1929-1931	8.71
Soviet Republic <sup>1</sup>	1929	10.6
United States <sup>1</sup>	1929	10.1
Germany <sup>1</sup>	1930	8.7
France <sup>1</sup>	1930	8.3
England and Wales <sup>1</sup>	1930	7.9
Japan <sup>1</sup>	1929	7.9
Sweden <sup>1</sup>	1929	7.9
Great Britain and Ireland <sup>1</sup>	1929	7.5

<sup>1</sup>Official Year-Book of the Commonwealth of Australia, No. 24, 1931. H. J. Green, Government Printer, Canberra, p. 699. Includes marriages of persons married before.

110.4 for China, 115.2 for North China, and 106.6 for South China. The figure for the South lies within the limits of the experience with Western countries, but that for the North is considerably higher than the ratios observed in countries where birth registration is fairly reliable.

Table 19. Crude birth rates and the ratios of male to female births; 12,456 farm families, 22 localities, 11 provinces, China, 1929-1931.

REGION	BOTH SEXES	BIRTHS		LIVING POPULATION AT END OF YEAR	BIRTHS PER 1,000 LIVING POPULATION	MALE BIRTHS PER 100 FEMALE BIRTHS
		Male	Female			
China	2,479	1,301	1,178	67,643	36.6	110.4
North China	1,134	607	527	29,909	37.9	115.2
South China	1,345	694	651	37,734	35.6	106.6

increase of the population through birth. A comparison of the crude rate of various countries indicates the differences in the rates at which their populations are replenished.

Before considering the birth rates, it will be well to examine the ratios of the sexes at birth, which are shown together with the crude birth rates in Table 19. They are

Does the large proportion of male births found in North China represent an actual situation, or is it the result of failure to enumerate baby girls as completely as possible? No positive answer can be given to this question, but some indications may be gathered from Table 20, which presents the results of a variety of studies of Chinese populations for which data have been gathered by the registration or by the survey method. Under registration, there were two methods used. The first method involved the registration of births in the hospitals or clinics, and the second method the reporting of the births in a registration area when they occurred. The former method is considered more accurate than the latter method. By the former method the highest ratio of male births to 100 female births was 116.8 reported from West Gate Hospital in Shanghai. The lowest ratio is 103.9  $\pm$  6.1, reported from the clinic of Peking Union Medical College Hospital. The weighted average for the three studies by this method is 111.6. By the latter method of recording births as they occur, the highest ratio was 115.  $\pm$  0.9, which is obtained from the municipal government in Singapore by Dr. F. Oppenheim. The lowest ratio is 107 at Kiangyin, Kiangsu province, by the University of Nanking. The weighted average for the three studies using this method is 114.7.

Two studies in which the survey method was used have been made by the individuals in hospitals. In one, the information was obtained by interviewing the parents of Chinese patients who visited a hospital or clinic. In the other, the data were obtained by interviewing the families of Chinese preachers. The ratio of male births to 100 female births was found by Dr. Lennox at Peking, in the first study, to be 119.1  $\pm$  2.6. The lowest ratio, 106.3  $\pm$  4.8, was found by Mr. Lai for the families of Chinese ministers.

METHODS OF AND SOURCES OF DATA	NUMBER OF BIRTHS		RATIO OF MALE TO 100 FEMALE BIRTHS
	Male	Female	
<i>Hospital registration</i>			
West Gate Hospital 1927-1929 <sup>1</sup>	1,561	1,336	116.8
P.U.M.C. Hospital 1925-1929 <sup>2</sup>	583	561	103.9 ± 6.1
First National mid-wife school Peiping 1929-1931 <sup>3</sup>	595	557	107
TOTAL	2,739	2,454	111.6
<i>Registration area</i>			
Oppenheim and Liang, Singapore, 1913-1922 <sup>3</sup>	33,238	28,881	115.1 ± 0.9
First health station, Peiping 1920-1931 <sup>3</sup>	3,675	3,337	110.0
Kiangyin, Kiangsu 1931-1932 <sup>4</sup>	423	344	107
TOTAL	37,336	32,562	114.7
<i>Survey method</i>			
Hsu and Chu, Peiping 1930 <sup>3</sup>	2,470	2,253	109.6 ± 3.2
Lennox, Peking, 1919 <sup>3</sup>	4,603	3,865	119.1 ± 2.6
Gray, Peking, 1919 <sup>2</sup>	2,554	2,169	117.7 ± 3.4
Lai, Chinese preachers 1929 <sup>3</sup>	1,035	973	106.3 ± 4.8
TOTAL	10,662	9,260	115.2
<i>Present study</i>	1,301	1,178	110.4

<sup>1</sup>Wu, T. L.: A Study of Ratio of Births. Proceedings of the First Annual Conference of Chinese Sociological Society, 1932. (In Chinese.) pp. 248 ff.

<sup>2</sup>From personal notes gathered by Edgar Sydenstricker, Milbank Memorial Fund.

<sup>3</sup>Hsu, Kang-Liang and Chu, Fu-Tang: Statistics concerning Births and Deaths in the Children of 2,168 Chinese Families. *The National Medical Journal of China*, xvi, No. 6. December 1930, pp. 744-755.

<sup>4</sup>Birth Registration Record of Kiangyin Registration Area in 1931. Department of Agricultural Economics, University of Nanking.

Table 20. Comparison of the sex ratios at birth computed from registration data with those based on data gathered by surveys.

It is apparent that the more reliable the method of collecting the data, the more nearly the results approach Western

experience. The hospital registrations yielded an average of 111.6, and the rates from registration areas and hospital surveys are nearly the same, while the other surveys yielded higher ratios.

The results secured in the present study are about the same as those found by hospital registration, and indicate that a fair degree of accuracy can be obtained by the survey method. However, the fact that several scholars have found still lower ratios and that in this study the ratio is low for the South, where the

population is less bound by tradition, would seem to indicate that there was some unwillingness to report the birth of girl babies in the North. The fact that female births were omitted suggests the possibility that some boys were also omitted in the count. It appears probable that at least the birth rate for North China (Table 19) is somewhat too low.

In spite of this underenumeration the birth rate obtained for the North (37.9) was somewhat higher than that for the South (35.6). It seems likely, therefore, that the figures underestimate the difference in the actual rates for the two regions.

The rate for all China (36.6) is somewhat higher than that for Japan (33.0) and among the countries listed in Table 21 is exceeded only by the rates for the Soviet Union and India. Those for all of the other countries listed are substantially

Table 21. Crude birth rates for various countries.

Country	Year	Births per 1,000 Population
Sweden <sup>1</sup>	1929	15.2
England and Wales <sup>1</sup>	1930	16.3
Great Britain and Ireland <sup>1</sup>	1930	16.9
Germany <sup>1</sup>	1930	17.5
France <sup>1</sup>	1930	18.1
United States <sup>1</sup>	1929	18.9
Japan <sup>1</sup>	1930	33.0
China	1929-1931	36.6
Soviet Republic <sup>1</sup>	1927	44.4
India <sup>2</sup>	1901	44.4

<sup>1</sup>Official Year-Book of the Commonwealth of Australia: No. 24, 1931. H. J. Green, Government Printer, Canberra, p. 684.

<sup>2</sup>Imperial Gazetteer of India, The India Empire: Vol. I, Oxford University Press, 1907, p. 478.

lower, ranging from 15.2 for Sweden to 18.9 for the United States.

#### FERTILITY OF MARRIED WOMEN

As pointed out above the crude birth rate is affected by the age and sex composition and the marital condition of the population as well as by the specific fertility of married women. If we are to gain insight into the significance of the difference in the birth rate for various populations, some of these factors must be taken into account.

The crude birth rates for North and South China were 37.9 and 35.6 respectively (Table 19), that is, an excess of 6.5 per cent for North China. The difference is not attributable to a difference in the proportion of the sexes in the two regions (Chapter III). When, however, we compute the birth rates in terms of number of women of childbearing age (15-44 years of age), they are 178 for the North and 163 for the South or an increase in the percentage differences from 6.5

Table 22. Percentage age distribution of females; 12,456 farm families, 22 localities, 11 provinces, China, 1929-1931.

Age (Years)	China	North China	South China
0-9	25.0	23.3	26.4
10-19	17.9	17.7	18.0
20-29	17.3	17.1	17.5
30-39	13.5	12.8	14.0
40-49	11.4	12.4	10.6
50 and over	14.9	16.7	13.5
Total	100.0	100.0	100.0

per cent to 9.2 per cent. This means that North China had a higher crude birth rate than South China in spite of the less favorable age composition of its population (Table 22). If, finally, for those localities for which marital condi-

tion is known,<sup>18</sup> the fertility rates are obtained by dividing the number of births by the number of married women of childbearing age (Table 23) the percentage excess of the North

<sup>18</sup>See footnote to Table 23.

drops again from 8.5<sup>14</sup> to 6.1. This drop is due to the fact that a larger proportion of the women of childbearing age are married.

Table 23. Fertility rate of married women, 15-44 years of age, and per cent of females 15-44 married; 10,832 farm families, 20 localities, 11 provinces, China, 1929-1931.<sup>1</sup>

Region	Per Cent of Females 15-44 Married	Births per 1,000 Married Women 15-44
China	84.5	202
North China	85.7	209
South China	83.7	197

<sup>1</sup>Two areas for which data on marital condition were not reported are omitted. See footnote 12.

married. This larger proportion of married persons is in turn accounted for by the earlier marriage age which we have seen to be characteristic of the North.

The fertility rate for Chinese married women (201.6) was higher than that for any Western country shown in Table 24, but lower than that for Japan, 245.5. This is the reverse of

Table 24. Fertility rate of married women 15-44 years of age, and per cent of females 15-44, married, for various countries.

COUNTRY	BIRTHS PER 1,000 MARRIED WOMEN 15-44	CRUDE BIRTH RATE	PER CENT OF FEMALES 15-44 MARRIED
China <sup>1</sup>	201.6	37.0	84.5
Japan <sup>2</sup>	245.5	33.9	66.7
England and Wales <sup>2</sup>	179.1	20.9	48.5
Germany <sup>2</sup>	162.2	21.7	48.4
Sweden <sup>2</sup>	196.8	21.0	41.2
France <sup>2</sup>	149.3	17.3	52.3

<sup>1</sup>Two areas for which data on marital condition were not reported are omitted. See footnote 12.

<sup>2</sup>Thompson, W. S.: *Op. cit.* p. 91. Birth rates are for 1918 and 1922 and per cents of females married for 1921.

<sup>14</sup>For twenty localities for which fertility rate can be calculated. The percentage excess for all twenty-two localities was 9.2. See footnote 12.

the relationship of the crude rates for China and Japan. China had a rate of 37.0<sup>15</sup> while that for Japan was 33.9. A clue to the reason for China's lower fertility rate and higher birth rate may be found in the fact that 84.5 per cent of the Chinese women of childbearing age were married as compared with only 66.7 per cent in Japan. Similarly, the fertility rate for Sweden was not much lower than that for China but the crude rate was much lower, due in large part to the fact that only about one-half of the Swedish women were married. The explanation of China's higher birth rate, therefore, lies in the fact that an exceptionally large proportion of the eligible women are married and when married they exhibited a relatively high fertility rate.

<sup>15</sup>This is for the twenty localities for which fertility rates are available.  
See footnote 12.

## TWO FINAL REPORTS OF HEALTH ACTIVITIES IN SYRACUSE ARE REVIEWED

**I**N 1922, the Milbank Memorial Fund announced that it would finance three health demonstrations in New York State—one in a rural county, one in a medium-sized city, and the third in a metropolitan area. The story of the rural experiment has already been told in **HEALTH ON THE FARM AND IN THE VILLAGE**. The accounts and appraisals of the general program and of the health educational work in Syracuse, New York, the urban center, have just been published. These final reports are discussed below by two experts in the respective fields.

### A "CASE STUDY" OF URBAN HEALTH SERVICE<sup>1</sup>

by W. F. WALKER, DR. P.H.

**T**HE City of Syracuse with the aid of the Milbank Memorial Fund, according to the foreword, set out to ascertain by actual demonstration how much additional protection of the health of its people could be secured by a substantial increase in the expenditure for this purpose on a well-considered plan. In discussing this experiment, ten years after its beginning, Dr. Winslow has given us an excellent case study of an entire community, discussing first the population and reason for existence of the modern city, indicating the social responsibilities which people assume by living in urban communities, which responsibilities were more universally regarded by the Greeks and Romans. The author indicates that this civic consciousness of a responsibility is the foundation upon which the public health program must be built. On such a philosophical background the author presents the history of Syracuse in sufficient detail so that the reader may have an understanding of the type of community and see that this city, which is set upon a hill and

<sup>1</sup>Winslow, C.-E. A.: *A City Set on a Hill*. Garden City, New York, Doubleday, Doran and Company, Inc., 1934. 367 pages. \$3.00.

has done unusual and outstanding things in the field of public health, is not essentially different from other communities of the same age and position.

Reciting the accomplishments of the years during which the experiment was carried on, the author points out the reduction in death rates from five acute communicable diseases (diphtheria, measles, scarlet fever, typhoid fever, and whooping cough) which shows a 58 per cent reduction as contrasted with the ten years immediately preceding the beginning of the demonstration. Since the first responsibility of a public health program is in the control of the acute communicable diseases this responsibility may be said to be unusually well met in Syracuse. The pulmonary tuberculosis death rate in the same period was reduced 46 per cent; the diarrhea and enteritis rate, 74 per cent.

The chapters which discuss the health program indicate clearly that the educational activities directed for the encouragement of healthy living have been equally well provided for. As an index of this may be cited the high score of 865 of a possible 1,000 when the activities are rated by means of the APPRAISAL FORM FOR CITY HEALTH WORK developed by the American Public Health Association, which is a measure of organization and service rather than ultimate accomplishment. The attitude of the community toward these services may be gauged by their increased expenditure of money. The department of health and the department of education combined increased their expenditures for public health purposes by nearly \$190,000 in nine years. Two voluntary agencies increased their contributions by \$27,000. Such a response occurs only when the product is known to be worth while. In this regard Syracuse is truly set upon a hill. The public health program engaged in was one which similar communities can follow faithfully. The results in life saving and increased appreciation of personal and community hygiene are beacons leading us to continue such services on a community basis. The acceptance and administration of the program by the local community should encourage civic leaders everywhere.

In this discussion, the author has generously treated the program as a whole and given detailed consideration to the principal public health functions of the community, whether organized and carried

on under the department or other municipal or private agencies. In reviewing the balance sheet, even with human values what they are today, the most mercenary minded would find it difficult to claim that these investments in health are not worth while as the author points out in the last chapter.

The public health reader will undoubtedly wish that the chapters discussing the public health services by functions were in more detail that he might know more specifically by what means the results were accomplished and how the various services fitted together. The lay reader, on the other hand, will find the detail somewhat of a barrier in getting the proper perspective of the whole experiment. One wonders what audience the author had in mind.

A CITY SET ON A HILL is a case study of urban health service which should be stimulating to all interested in public health and civic and social welfare.

## THE STORY OF HEALTH EDUCATION IN SYRACUSE

by SAVEL ZIMAND

INNUMERABLE definitions have been given of health education, but underlying them all is the thought that this term may be taken to mean "the sum of all efforts to modify human conduct and attitudes so as to raise the health levels of individuals and of the community."

A comprehensive health education program should cover at least three phases: (1) health education in the schools, with a place in the curriculum, not as a separate subject, but as an all-day influence; (2) professional education on public health, with educational facilities for physicians, dentists, teachers, etc., and the establishment of closer working relationships between the practitioners and the Department of Health; (3) health instruction in the community at large, which should have the threefold aim of familiarizing the community with facts related to health conservation; of securing desirable changes in public opinion, attitudes, and habits on questions of preventive medicine and public health; and of educating the people to utilize the services of private physicians or, if financially unable to do so, of clinics.

It is this third phase of health education which is the subject of a monograph<sup>1</sup> by Miss Louise Franklin Bache. The author has had a great deal of experience in this field, was director of health education of the Department of Health of Syracuse from 1923-1928, and is apparently a resourceful person with flashes of imagination. In a little over one hundred pages, Miss Bache describes how she carried on popular health education activities in a community of over 200,000 people with a school population of about 50,000.

Simply and clearly, sometimes perhaps in too great detail, Miss Bache tells how she brought to the people of Syracuse the message of public health and preventive medicine. In this work were utilized all the important resources available for disseminating information—the press, the platform, the radio, the cinema, the exhibit, the pageant and parade, the poster and pamphlet, etc. The intensive campaigns carried on in Syracuse during this five-year period were in the fields of diphtheria and measles, prevention of colds, the promotion of annual health examinations, and social hygiene. Using the anti-diphtheria effort as an example, the author points out the methods used to carry on these campaigns. She indicates frankly which were successful and which were fruitless, and thus adds to the effectiveness of her story.

This is a very useful booklet so far as it goes, but one would have wished to secure more than the technique and machinery employed for carrying out the work. It would have been of great value if Miss Bache had given more of a description of the program as a whole. Questions like this, for instance, occur to one—Why were certain fields and not others given emphasis in special campaigns? Why colds, about which comparatively little is known, and not accident prevention, on which we can do a great deal? (On page 81 of the volume, mention is made of "safety first" in connection with the child health campaign conducted in May.) How was the social hygiene program made up? How did the Department of Health cooperate in the tuberculosis campaign conducted by the Onondaga Health Association?

Moreover, why not give an account of the effects of the work, insofar as they can be gauged? The low mortality rate during the

<sup>1</sup>Bache, Louise Franklin: *Health Education in an American City*. Garden City, New York, Doubleday, Doran and Co., Inc. 1934. 116 pages. \$2.00.

measles epidemic of 1926 is the only indication given, although undoubtedly there are others. We know, for instance, that Syracuse has had an admirable record in the reduction of mortality and morbidity from diphtheria.

HEALTH EDUCATION IN AN AMERICAN CITY gives practical suggestions which will prove of value to those interested in popularizing health knowledge. The illustrations enhance the usefulness of the monograph.